



BRIEF

Debo s.r.l. is a Piedmonts located society with owns around 2.000 beef cattle. Composed of a farmer and an investor, in 2015 the society decided to build a biogas plant in order to:

- **Enhance** the farm by-products in an intelligent way;
 - Produce a high-quality organic **fertilizer**;
- **Integrate the income** of the firm with the sale of the electrical energy.

THE PLANT

Sebigas has built a biogas plant with a **feeding tank** and a **monodigester**. The plant is only fed with the company's **by-products**, which are slurry and cattle manure with straw. Plant choices have been implemented in order to maximize operating hours, limiting plant downtime only for the ordinary maintenance of the cogenerator.

CLIENT NAME:

Debo s.r.l.

LOCATION:

Niella Tanaro (CN)

FEEDING:

Liquid and solid cow manure with straw

INSTALLED POWER:

300 kW

THE RESULT

The feeding tank engineered by Sebigas is able to collect both solid and liquid materials, with a high **efficiency** in the **homogenization** of the incoming substrates. The monodigester is equipped with an efficient mixing system with balconies for the extraction of mixers during the operation of the plant; it's also equipped with a double membrane gasometer to ensure high reliability over time. Maintenance costs are reduced to the replacement of the parts subject to wear.

The electricity is sold to the grid with a special fee-in-tariff, the heat is reused in the farm's production cycle and to heat the digesters. Moreover, digestate is used as a fertilizer and soil improver.



THE CLIENT

Salera is a family-run farm based in Castelvico (CR). Strongly believing in the importance of a sustainable agriculture, in 2011 Salera chose to build a biogas plant fed with **88.000 q/y of agricultural by products** (from a 200-ha farmland) and **10.800 cm/y of pig manure** (from 8.500 heads/y).

THE PLANT

The biogas plant consists of a storage area, a loading pre-tank, a primary digester and a secondary digester with a double membrane cover for the accumulation of biogas. The plant has an installed power of **625 kW** and a biogas production of **280-312 nm³/h**.

CLIENT NAME: Salera

LOCATION: Castelvico (CR)

FEEDING: Rye silage, corn silage, pig liquid manure

INSTALLED POWER: 625 kW

THE RESULT

Firstly built to enhance agricultural waste for electrical production, the plant performances guided Salera in optimizing the thermal energy produced in the cogenerator unit. In 2018, the company decided to **start Spirulina Algae cultivation**: the thermal energy produced from biogas, which is available all year long, is used to keep the temperature of the cultivation tanks stable at 34° C. Starting from a biogas plant, the client can sell a biological product coming from an **innovative and sustainable company**.



CLIENT NAME: Evergreen Bio Energy SA

LOCATION: Nivelles (Belgium)

FEEDING: Slurry and manure, agriculture by-products, corn, beer residues

INSTALLED POWER: 600 kW

THE PLANT

Nivelles is a **single-stage anaerobic digestion plant**, designed for the optimization of spaces. The loading line is suitable for biomass containing straw and is structured to receive **heterogeneous by-products**. The flexibility of the mixing system and external maintenance allow the minimization of downtime **maximizing** the number of operation hours.

THE RESULT

The plant is fed with equine manure, slurry and cattle manure, pig slurry, fruit and vegetable waste and second harvest crops. In this way, the weight of inputs in the operational costs are reduced and allows **flexibility** in the supply chain.

The plant designed by Sebigas, allows EBE to enhance the importance of biogas through **cogeneration** and to return to local farmers a quality **digestate** as a soil improver



AGRICULTURAL PLANT

BRIEF

In 2010, Li.F.E. decided to build a biogas plant to enhance **high volume** of biomasses coming from the surrounding farms.

Thanks to biogas production, the company can properly valorize manure and agricultural by-products producing green energy and high quality organic digestate.

THE PLANT

Sebigas has built a biogas plant with a **feeding tank** and 2 + 2 digesters. The plant is fed with agricultural by-products, which are maize silage and triticale silage, and pig and cow manure.

Plant choices have been implemented in order to **maximize** operating hours, limiting plant downtime only for the ordinary maintenance of the cogenerator.

THE RESULT

With an installed power of 999 + 999 kW and a biogas production of around **500 + 500 Nm³/h**, the electricity produced in the plant is sold to the **national grid**. The digestate is returned to local farmers as **organic fertiliser**, eliminating the use of synthetic products, proving the importance of implementing a sustainable form of agriculture with a focus on circularity.

CLIENT NAME:

Li.F.E.

LOCATION:

Livorno Ferraris
(Vercelli)

FEEDING:

Pig and cow manure, maize
silage, triticale silage

INSTALLED POWER:

999 + 999 kW

**CLIENT NAME:**

Xalastra

LOCATION:

Salonicco (Greece)

FEEDING:

Cattle manure, slaughter waste, expired food, beer residues, whey

INSTALLED POWER:

1 MW

CLIENT

Xalastra is an anaerobic digestion plant located in Salonicco (Greece) built in 2017.

It consists of two digestors and structured in order to process heterogeneous and **complex biomasses**. The plant has a pre-treatment phase of by-products consisting of a **sanitization** and **pasteurization** system. At the end, digestate undergoes on a specific **water treatment**.

THE PLANT

The plant processes **148 tons of by-products daily**, divided into cattle manure, slaughter waste, expired food, beer residues and whey. The plant has an installation power of **1 MWe** and produces **450-500 Nm³/h of biogas**.

THE RESULT

The biogas plant allows processing industries, such as Xalastra, to **valorize** waste by producing electricity, that is reused in their production cycle.

At the same time, it let them **remove costs** given by the disposal of waste. As a further element supporting the role of biogas achieving a circular economy, the **reuse of digestate** as a fertilizer and soil improver in the surrounding areas.



THE PLANT

Sebigas designed and built a biogas plant to process **heterogeneous substrates and a high volume of biomass** - approximately 67,000 t/y-, composed of slaughterhouse waste and by-products. Specific engineering and technological choices were implemented to maximise biogas production and exploit the potential of complex matrices in anaerobic digestion.

The biogas plant, consisting of a **metal digester**, is also equipped with a pasteurisation line specifically designed to treat slaughterhouse waste.

CLIENT NAME:

Bioquercy

LOCATION:

Gramat (France)

FEEDING:

Slaughterhouse waste and by products

INSTALLED POWER:

1.800 kW

THE RESULT

With an installed power of **1,800 kW**, the electricity produced in the cogeneration process is sold to the grid, according to specific incentive schemes. The thermal energy is used to heat the digesters and the pasteurisation process: a concrete example of circular economy.

In addition, the digestate is used as organic fertiliser for the land surrounding the plant.



THE PLANT

The biomethane plant designed by Sebigas for Maserati Energia s.r.l. Is fed with organic municipal solid waste fraction (**OMSWF**). It is structured to optimize the different treatment phases, minimizing wastes. The wet anaerobic digestion process consists of **5 reactors**, in details 1 feeding tank, 3 digestors and a post-digester. In addition to the digestate treatment, an upgrading process allows the production of **biomethane**.

THE RESULT

The plant is built to treat up to **50.000** annual **OMSWF** tons and around **5.000 plant residues** tons. The output coming from the different treatment phases have many uses: the digestate is reused as a fertilizers for the soil, and the purified liquid effluent is destined to **river discharge**, then released into the production cycle. In addition, biomethane is used as a **fuel for transportation**.

ADVANTAGES

Plant built for OMSWF treatment, such as Maserati's one, allow the **enhancement** of a great number of **citizens** – 600.000 in the surrounding area – and reduce the necessity of waste transport itself. Environmental benefits and the energetic production are a concrete example of what circular economy means.

CLIENT NAME: Maserati Energia srl

LOCATION: Sarmato (Piacenza)

FEEDING: OFMSW

BIOGAS PRODUCTION: 1056 Sm³/h

BIOMETHANE PRODUCTION: 630 Sm³/h