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BTS Biogas, intelligent management of organic waste

The transformation of waste- and by-products into a valuable resource creates value for the Community and Environment

Franco Lusuriello, CEO
BTS Biogas

Anaerobic digestion systems represent an economically and environmentally sustainable solution capable of transforming waste into renewable energy. Thanks to a highly experienced team and 29 international patents, BTS Biogas transforms by-products into a valuable resource that that returns to the production cycle. Through its 250 plants worldwide, the company contributes to the energy transition process by producing biogas, biomethane for transport, electricity and heat, soil fertilisers and carbon dioxide for food use. Some of the most important projects developed by BTS Biogas are plants fuelled by olive pomace, OFMSW (Organic Fraction of Municipal Solid Waste), farm effluents and biological waste from food companies.

BTS Biogas is an Italian company that has established itself on the domestic market and internationally as a technological leader in the field of anaerobic digestion. The Group has been involved in the development, engineering, construction and maintenance of over 250 biogas plants in Europe, North America and East Asia for more than 25 years. Thanks to a highly experienced team and 29 international patents, today the company provides consultancy and customised technological solutions for the design, construction, commissioning, maintenance and assistance of systems, which are recognised by the market for their high levels of reliability and for the continuous production of energy.

"BTS Biogas provides consultancy and customised technological solutions for the design, construction,

commissioning, maintenance and assistance of anaerobic digestion systems

BTS Biogas believes that the “smart” management of organic waste and the generation of clean energy are crucial to building a sustainable future for local and global communities. Under this perspective, anaerobic digestion systems represent an economically and environmentally sustainable alternative to the current waste management system: indeed, organic residues are transformed into renewable energy allowing communities and companies to achieve the goal of “zero waste” and increase decarbonisation more quickly.

Indeed, anaerobic digestion unites two fundamental components of our society - the food system and the production of energy - in a closed system in which the by-products of one become the raw materials of the other and are transformed into a precious resource for the community. The natural gas created by the anaerobic digestion process comes from organic waste, a source that is continuously replenished by man, which, if not used in this system, would in part increase climate-altering emissions. Unlike other energy sources, the combustion of biogas does not contribute to increasing the atmospheric concentrations of CO2 of fossil origin and is therefore one of the best sources of energy.

BTS Biogas operations are managed by over 100 employees, located at the Italian headquarters in Affi (Verona) and in Brunico (Bolzano) and the offices abroad in France, the United Kingdom and the USA, which were inaugurated in 2021. Through its plants, the company contributes to the process of energy transition towards a circular economy with the production of biomethane for transport and the network, electrical and thermal energy, soil fertilisers and carbon dioxide for industrial use. Some of the most significant projects for the type of by-products used are represented by plants powered by olive pomace, OFMSW, the effluents of farms or biological waste from food companies.

Agroenergy among the first plants in Europe powered by olive pomace

The Agoenergy biogas plant, built by BTS Biogas in 2019 in Andria, Apulia (Italy), is owned by the Agresti family, which also owns the Agrolio company that has been producing extra virgin olive oil for three generations. The Agresti family has been able to make use of olive pomace for anaerobic digestion with significant advantages for the environmental impact and economic balance sheet of the company, combining tradition and local values with innovative circular economy models.

Indeed, Agroenergy is one of the first plants in Europe to be powered 100% by pitted biphasic olive pomace, which was previously stored in stainless steel silos. This source of power can also be supplemented by other by-products of the agricultural supply chains on the territory.

With the biogas produced, the cogeneration module generates 500 kW of electricity and 500 kW of thermal energy, while the digestate is part of the plant cycle of olive production, helping to improve its quality and quantity. The efficiency and functionality of Agroenergy are guaranteed by careful, continuous biological support: the process is mesophilic (35° - 48°C) and involves a preliminary digestion phase in a hydrolysis pre-tank. Two storage tanks with floating covers and a separator were built downstream of the fermenter.

AMIU, the plant in the metropolitan city of Bari powered by OFMSW

Owned by AMIU, the municipalised urban hygiene company that manages the waste collection, processing and disposal activities in the city of Bari (Apulia, Italy), the plant built by BTS Biogas in 2020 has an installed power of 1,200 kW_{el}. The site, powered by OFMSW (Organic Fraction of Municipal Solid Waste) mixed with other compostable waste fractions such as pruning cuttings, is able to produce electrical and thermal energy and soil fertilisers. It is one of the few plants constructed for the processing of organic waste in a metropolitan city, built to utilise organic waste and make a virtuous and sustainable waste disposal system available to citizens.
The project involves AMIU collecting and transporting waste to the plant's delivery areas, where the quality of the biomass is assessed: that which is not considered suitable is discarded. The plant is able to produce electricity or heat for self-consumption, with the surplus being sent into the network.

Demeter Energies, the French plant powered by farm effluents

The Mauzé-sur-le-Mignon plant (France) was built by BTS Biogas in 2016 for Demeter Energies, the capital of which is held by local dairy cattle, beef cattle and goat breeders and cooperatives and Sergies, the energy union which holds 20%. This initiative was in response to the demand that requires French farmers to reconsider their production methods and diversify them to keep the sector alive.
The plant, with a capacity of 499 kW_{el}, is able of processing the effluents of 12 farms located within a radius of less than 8 km, converting them into electricity, heat and natural fertiliser.
The surplus, which corresponds to 1,500 MWh, is channelled into the heating network built by Demeter Energies in Mauzé-sur-le-Mignone and used by public buildings, saving the equivalent of 15 tonnes of gas for the René Caillié secondary school, 115,800 litres of fuel for the swimming pool and municipal buildings and 135,000 litres of fuel for the corn and alfalfa dryers. The electricity produced meets the domestic needs of around 1,300 people. Mauzé-sur-le-Mignon was one of the first French cities with fewer than 10,000 inhabitants to produce heat and energy from renewable sources.

Equimeth produces biogas from the biological waste of the Fontainebleau region

The plant, built by BTS Biogas in 2021, produces 25 GW/year of electricity and 250 Nm^3/h of biomethane. This project represents one of the most important biological waste recovery units in the Moret-Loing-et-Orvanne area (France) because it produces biogas from wastewater, biological agricultural and food industry waste. The Fontainebleau region, where it was built, is known for its equestrian traditions. Historically, manure from horse farms was used to fertilise mushrooms grown on nearby farms, but their relocation forced a rethink on alternative forms of recovery of this biomass, which has become the focus of the Equimeth project. This site, which uses 25,000 tonnes of organic matter every year, provides up to 15% of the gas consumed by the inhabitants of the municipalities of Moret-Loing-et-Orvanne, Fontainebleau, Saint-Mammès, Avon, Thomery or Champagne-sur-Sein and allows the majority of local biological waste to be processed using pasteurisation. The biomethane produced by the plant corresponds to the annual gas consumption of 4,000 families and avoids the emission of nearly 7,200 tonnes of carbon dioxide per year. Every year, 1,300 hectares of agricultural land are fertilised using the digestate produced. Digestate is an easier fertiliser to process than manure as it is more concentrated, and nutrients are more easily assimilated by crops.

In France, organic waste accounts for one third of residual household waste and can be a source of pollution if incinerated or landfilled. Equimeth makes it possible to recover and optimise these elements, transforming them into a valuable resource for the community. The presence in Ile-de-France of large volumes of organic matter from agriculture and the food industry, together with quality transport infrastructure, are factors that promote the development of biogas in the region.
The construction of this plant marks an important step towards the energy autonomy of Ile-de-France and contributes to achieving the energy objectives of the region, which envisage the use of 40% of energy from renewable sources by 2030 and 100% by 2050.

The Jessup plant, one of the latest generation projects developed in the United States

Located in the Maryland Food Center, home to one of the largest agri-food logistics districts in the region, the Jessup plant is one of the latest generation projects developed by BTS Biogas in the United States in 2021. The plant will produce 1,600 m^3/h of biogas and 1.2 MW_{el} per year and will use over 125,000 tonnes of waste from the processing of fruit and vegetables, meat, baked goods, oil and fats, which will generate around 800 cubic metres of biomethane an hour, resulting in a quantity that is equivalent to the needs of 4,800 homes. The biomethane produced will be channelled into the network and used for transport, while the thermal energy generated will be used to heat the digesters and the surplus will be sold to third parties. A semi-permeable membrane technology also allows nitrogen to be recovered and water to be purified, which is then partially reused in industrial processes.

Two pre-processing systems have also been included in the plant, to eliminate any impurities from the incoming material, as well as a "Waste Water Treatment" post-processing system, capable of purifying the digestate by dividing the liquid component from the solid one. The solid fraction is used as fertiliser in agriculture, while the liquid fraction is recycled during pre-processing and is partly sanitised. The project allows the exploitation of food waste by transforming it into electricity and thermal energy with significant benefits for the environment. This site is part of a series of new plants that BTS Biogas is developing in the United States, a market with policies that promote the generation of energy from renewable sources, such as biogas.

The South Milford agro-industrial plant

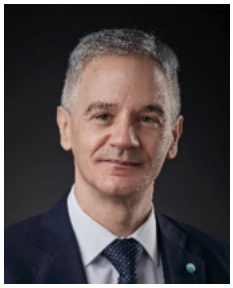
The plant, owned by AB Agri, a company specialising in the production of feed and data services for the agri-food industry, was built by BTS Biogas in 2016 in South Milford (North Yorkshire), in the United Kingdom. With a capacity of 500 kW_{el}/h of biogas and 550 Sm^3/h of biomethane, the site is capable of receiving up to 100,000 tonnes per year of organic waste from industrial food processing and green waste, which is used to produce about 4.2 million Sm^3 of biomethane and 4.2 million kWh of electricity. Thanks to a membrane purification system, in addition to producing electricity, the plant is able to transform biogas into biomethane and channel it directly into the national gas network, minimising CO_2 emissions. The heath, on the other hand, is used to heat the fermentation tanks, the upgrading units and the pasteurisation system. In the meantime, the digestate obtained is used to produce 50,000 t/y of pasteurised liquid fertiliser.

The plant uses the "Waste to Power" pre-treatment solution, designed to manage both packaged and bulk organic waste, including liquids, and can be suitably installed on BTS Biogas plants ranging from 500kW to over 1.5MW. Thanks to the flexibility of this system, it is possible to effectively process perishable organic raw materials at decentralised locations on a more appropriate and sustainable scale, without transporting them over considerable distances to centralised anaerobic digestion hubs, substantially reducing the carbon footprint of operators.

Municipal household waste, food production waste, hospitality, retail and public sector waste are then transported to the South Milford site. The plant uses 40,000-60,000 t/y of liquid food waste, 10,000-20,000 t/y of solid food waste and 10,000-20,000 t/y of green wastes that contribute to the production of biomethane.

"Today, BTS Biogas has a pipeline of projects around the world that will help increase the production of biogas by reducing climate-altering emissions

Today, BTS Biogas has a pipeline of projects around the world that will help increase the production of biogas by reducing climate-altering emissions. Biogas is also destined to play a leading role in the on-going effort for energy independence, which has become a central issue on both Italian and European political agendas.



Franco Lusuriello

Franco Lusuriello, born in Genoa, is the CEO of BTS Biogas, a technological leader in the development and construction of biogas and biomethane plants. The manager has a profound understanding of the energy sector and has spent a career spanning thirty years in the Power Plants, renewables and civil construction markets, as well as having consolidated experience in the management of strategic operations in highly competitive markets.
Lusuriello has been at the helm of BTS Biogas since 2020, the year in which he joined the company, after having worked at Building Energy as Managing Director E&C, with global responsibility for pipeline projects in solar, wind and biomass technology. He previously held the position of COO of Building Energy US and was responsible for the North and Central American market. From 2008 to 2013, he was the General Manager of Rizzani De Eccher, a company operating in the civil and industrial construction and infrastructure sector, in Azerbaijan. Earlier, he was an Executive VP of Danieli SpA, a multinational global leader in the development of steel plants, which he joined after twenty years working at Tecnimont, Shell and ABB. Lusuriello has a degree in Electrical Engineering from the University of Genoa.