The BTS Biogas stripping system is able to remove up to 70% of the nitrogen present in the digestate produced by biogas plants.

An innovative technology for the post-treatment of the digestate makes it possible to solve the problem of excess nitrogen, further optimising biogas plants thanks to the production of a fertiliser in the form of ammonium sulphate. The Green Energy farm holding of Chiari (BS - Italy) is an example of a success story. In fact the company has a 1MW biogas plant mainly fed with chicken droppings and connected to a BTS Biogas stripping system which has made it possible to reduce nitrogen levels by up to 60%.

The management and treatment of digestate is a much controversial topic and an issue that still remains unsolved in many biogas plants. Anaerobic digestion in fact guarantees a reduction of less stable organic material but does not permit a reduction in the nitrogen load of the biomass entering the plant.

BTS Biogas, a leader in Italy in the biogas sector, has always worked toward the development of innovative technology and solutions to make biogas plants increasingly efficient regulations and environmental and economic requirements. For the management and treatment of digestate in particular, BTS Biogas offers a range of different solutions that permit Italian farmers to resolve the problem of excess nitrogen, at the same time complying with the Italian provisions implementing Directive 91/676/EEC, the so-called Nitrates Directive, which governs the agronomic use of zootechnical waste and other nitrogen fertilisers and defines vulnerable zones.

“There are many biogas plant operators who, in view of the nitrogen limits established by the law for disposal in their own area, have to cope with excess levels in relation to the land that their farms have available. In this case, farmers can certainly rent new land for disposal, ask other landowners for use of their land for manure spreading or even dispose of it as waste. All these approaches certainly involve considerable additional costs, especially in the long term” as pointed out by Luca Fortini.

One of the solutions offered by BTS Biogas for reducing the nitrogen content is the stripping system, which uses the nitrogen content to produce ammonium sulphate, a solution of nitrogen-based salts produced by a chemical process for reducing ammonia by means of a scrubber with acidic wash.

“There are many advantages connected with the use of a post-treatment system such as stripping. Besides solving the problem of excess nitrogen, it makes it possible to further optimise the biogas plant thanks to the production of a fertiliser such as ammonium sulphate,
which can be marketed outside the company with considerable potential in terms of economic sustainability. Furthermore, in view of the lower nitrogen level, less land is required for dispersal with consequent reduction of costs,” added Mr Fortini.

The Green Energy farm holding of Chiari, a success story in the post-treatment of digestate

The Green Energy farm holding of Chiari has installed a 1MW BTS Biogas plant mainly fed with chicken droppings. The farm holding has decided to install a drying and stripping system (both with BTS Biogas technology) for the post-treatment of digestate. Monitoring of the stripping plant immediately produced excellent results, which demonstrated a potential for reducing ammoniacal nitrogen by up to 70%. Another important point is that the stripping plant has been operating perfectly for more than a year and treats the digestate as is without the need for solid-liquid separation upstream. The Green Energy farm holding represents a success story and a model for many farmers and operators of biogas plants who have to deal with the issue of excess nitrogen.

BTS Biogas Srl/GmbH: general information

BTS Biogas, the leading Italian player in the biogas industry, is active in the design, engineering, construction and maintenance of modular biogas power plants with a rated capacity of 25kw to 1,5MW+. To date, BTS Biogas has built 180 plants with a total capacity of 150 MW. BTS Biogas handles the whole process – from the preliminary planning phase to routine and non-routine plant maintenance. The company’s more than a hundred employees, including biologists, technicians, chemists, agronomists and developers, are working daily to increase the efficiency of BTS Biogas' plants. Thanks to the experience and know-how of the companies of TSenergyGroup, to which BTS Biogas and also GTS Syngas are affiliated, BTS Biogas is able to offer the full range of solutions for the production of gas from biomass (wood and organic substrates) and prepare it for use as electrical energy, thermal energy and biomethane.

BTS Biogas Srl/GmbH

Headquarters: Brunico (South Tyrol)

Net sales (2014): 35 million euros

Headcount: 103 (biologists, technicians, chemists, agronomists, developers)

Products: Modular biogas plants, capacity 25kW bis 1,5MW+

Plants: 180 (total capacity 150 MW)

Customers: Agricultural companies, local authorities, food industry, refuse disposal and composting plants

Input: Farm-produced fertilizers, residues and agricultural by-products, organic waste materials and energy plants

Output: Electrical energy, thermal energy (heating and cooling), organic methane (for fuel and grid feed-in), organic fertilizers