



**BIOTECHNOLOGICAL
SOLUTIONS**




A LONG HISTORY DEDICATED TO THE R&D OF ECO-SUSTAINABLE BIOTECHNOLOGIES

Passion and commitment to ecology are the fundamental principles on which PANECO AMBIENTE's corporate culture and philosophy have been based for more than 40 years.

We offer **biotechnological solutions**, alternatives to chemicals, specifically developed for the improvement of production processes and the abatement of emissions and pollutants on both cause and effect.

Specifically:

- **Specific bio-based additives and nutrients for the purification process:** not the usual chemicals, but natural additives to ensure maximum performance.
- **Diffuse and ducted emission reduction:** provides highly effective solutions and facilities to address emissions in a targeted and diffuse manner.
- **Pollutant reduction** through microbiological solutions: solutions are offered to reduce pollutants using biological processes and promoting bio-activation and maintenance of odor abatement facilities such as scrubbers, biofilters, and biotrickling.
- **Counteracting algae growth and organic matter deposits:** specific solutions are proposed to counteract the growth and accumulation of algae and unwanted organic matter.



Cuneo, Piemonte
ITALY



OUR BIOTECHNOLOGICAL SOLUTIONS FOR ABATEMENT OF ODORS, POLLUTANTS, EMISSIONS AND ORGANICS



ADDITIVES

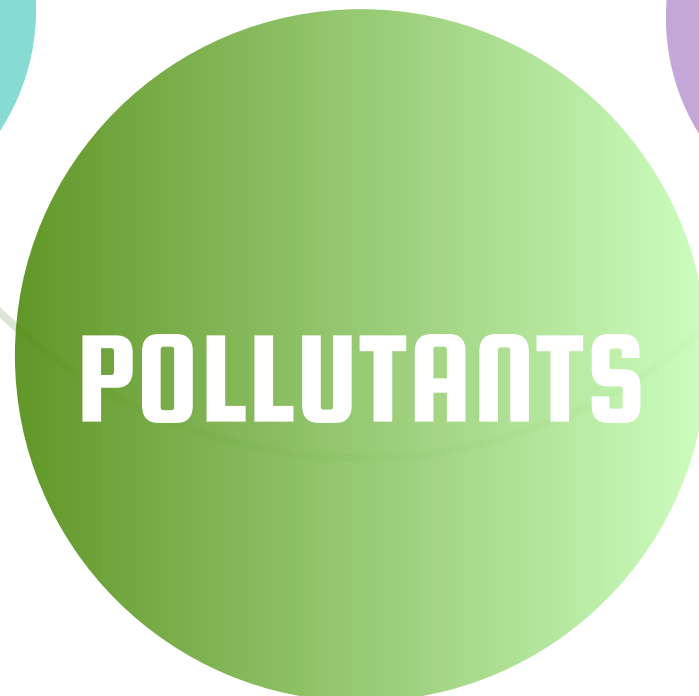
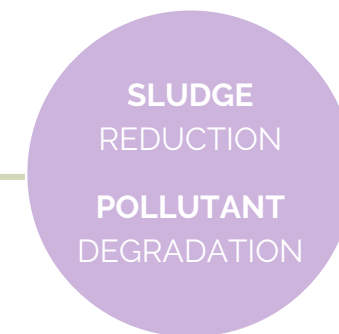
Range of **patented biological neutralizing additives** based on **plant extracts**.

ADDITIVES

Microbiological-based additives for **degradation** and **bioremediation**



Action on the EFFECT



SYSTEMS

- Modular long-range nebulizer systems
- Mobile nebulizers

SYSTEMS

Programmed dispensing automated dispensers





Exclusive blend of neutralizing plant extracts

-60/80%
ODOUR EMISSIONS



- MODULAR**
- FLEXIBLE**
- SCALABLE**

RS100
NATURVEBA®

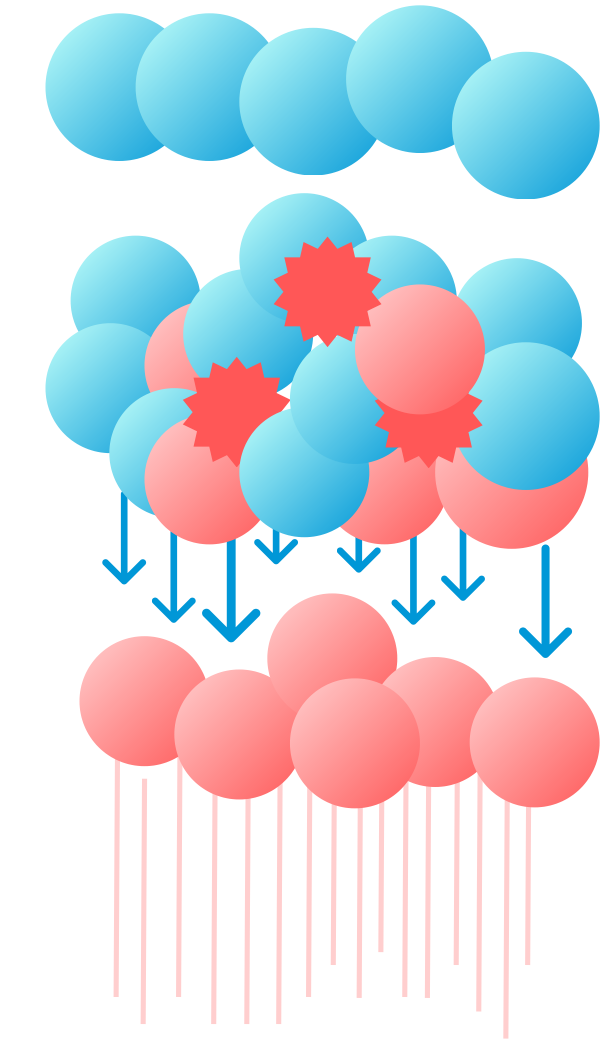


Concentrated neutralizing additive effective on broad-spectrum odorogenic emissions and H2S.

FRAGRANCE
NATURVEBA®



Concentrated neutralizing additive effective on broad-spectrum odorogenic emissions with pleasant fruity fragrance.



- Mercaptans
- Hydrogen sulphide
- Ammines
- Ammonia

ODOUR NEUTRALIZATION



Enhancement of biodigester yield with improved balance of biology and digestate



+2% BIOMETHANE IN BIOGAS

>10% KILOWATTS PRODUCED

ENHANCEMENT OF MATRICES

-20% H₂S

REDUCE IMBALANCES IN BIOLOGY

REDUCE THE FORMATION OF SCABS

REDUCES THE NEED FOR AGITATION BY 30%, ALLOWING SIGNIFICANT ENERGY SAVINGS

BIOMETHANE

ENZYVEBA®



A liquid microbiological solution composed of non-genetically modified microorganisms, designed to optimize the digestion of organic matter in biodigesters. It enhances the breakdown process, improving both the quality of the resulting solid and gaseous materials, while increasing the consistency and stability of the digestate.



DISPENSING / DOSING
VIA PANECO INJECTION

INCREASE IN THE PRODUCTION OF
BIOGAS AND BIOMETHANE



INCREASING THE PRODUCTION OF VALUABLE BIOGAS

LOCATION: Italy

OBJECTIVE: increase in biogas production, decrease in the FOS/TAC ratio, decrease in the ammonia fraction during anaerobic digestion, improvement of biodigestate characteristics, decrease in digestion time

TARGET: agro-zootechnical masses entering the plant

PERIOD: from 26 October to 27 January

SCHEME: injection of the product in the mixing phase of livestock manure and vegetation water

PRODUCT APPLICATION METHOD: timed and daily distribution by means of a specific injection system.

DESCRIPTION:

The case study detailed hereby shows how beneficial the ENZYVEBA® BIOMETHANE product is, **favouring methanogenesis processes** within anaerobic digestion tanks, **increasing the production of valuable biogas**. ENZYVEBA® BIOMETHANE, in fact, helps to control the pH, keep the ammonia nitrogen content under control and quickly degrade the incoming compounds feeding the plant. **The anaerobic digestion time decreased and the digestate was more suitable for open field distribution.**

COURSE OF TREATMENT:

Before treatment, the plant was operating at following conditions: anaerobic digestion time of 25 days, over a total storage volume of the anaerobic digester of approximately 500 cubic metres.

Based on these requirements, we have installed a customised and fully automated product dosing and injection system.

The distribution scheme was set on a daily basis and the dosing set via the electronic interface.

The concentration of ENZYVEBA® BIOMETHANE defined was 30 ml per cubic metre.

RESULTS:

The use of ENZYVEBA® BIOMETHANE with the same matrices fed into the plant favoured the hydrolysis of compounds such as cellulose and hemicellulose derived from the plant component. It has, in fact, **increased biogas production and electricity cogeneration by around 10%, from 36 kw/h to 40 kw/h.**

It was also possible to see a beneficial effect of ENZYVEBA® BIOMETHANE on **maintaining the biological balance of the plant.**

In the present case, it has in fact avoided situations of acidosis that were previously sporadic, **decreasing the H₂S concentration** and the content of the ammoniacal fraction in favour of more energetically useful compounds, thus **improving the FOS/TAC ratio.**

The reduction of the ammoniacal fraction resulted in a lower ammonia content in the digestate output, favouring its agronomically important characteristics for field distribution.

The plant owner was enthusiastic about the good results obtained and decided to continue the treatment at frequent intervals.

CASE STUDY





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In collaboration with and/or
with the accreditation of



GLOBAL SOIL
PARTNERSHIP

