METHANE PLUS ®

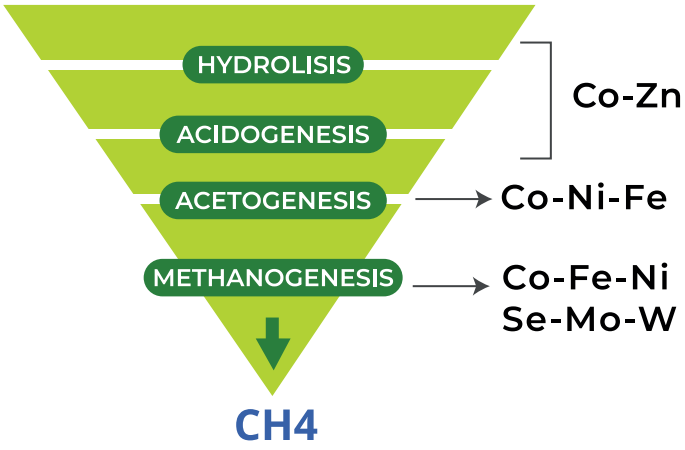
TRACE ELEMENTS TO BOOST BIOGAS PRODUCTION

DESCRIPTION

METHANE PLUS is a blend of chelated trace elements to enhance AD plants. METHANE PLUS increase biogas yields and plant stability. METHANE PLUS is designed to cover the nutritional deficiencies of existing microorganisms.
A healthy methanogenic population leads to an increase in biogas production. All micronutrients present in the product are chelated to ensure the bioavailability of trace elements by preventing them from precipitating into the reactor.
There are complex interactions within the anaerobic reactor between the microorganisms responsible for the degradation of the organic matter. Methane Forming Bacteria (MFB) are the last link in the chain and represent the bottleneck of the process.
MFB are primitive organisms that have a very slow metabolism, both to multiply and to respond to changes in the environmental conditions. This is the reason why it's so difficult to get the reactor biomass to increase significantly.
It is not only important to supply trace elements in sufficient quantities, but it is also essential that they are bioavailable so that microrganisms can use them.

PROCESS

Biogas is generated in a four-stage biological process:



TRACE ELEMENTS

Since methanogens have unique enzyme systems, they also have unique nutritional requirements that differ from other bacteria.

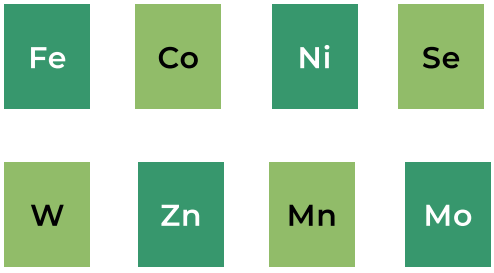
The presence of cobalt, iron, nickel, selenium, manganese, molybdenum, tungsten and other metals are essential for the proper functioning of the bioreactor.

Incorporation of trace elements in enzymatic systems is essential not only for the correct degradation of organic matter but also for a stable operation of the reactor.
Deficiency in even only one nutrient may limit microbial activity and, consequently, digester performance and methane output.

The presence of the necessary trace elements in the system helps to minimize reactor acidification events due to the accumulation of volatile fatty acids (VFA).

MINERAL TRACE ELEMENTS present in our product are the following:

- **Iron**
- **Cobalt**
- **Niquel**
- **Selenium**
- **Zinc**
- **Tungsten / Wolfram**
- **Manganese**
- **Molibdenum**



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TRACE ELEMENTS TO BOOST BIOGAS PRODUCTION

DESCRIPTION

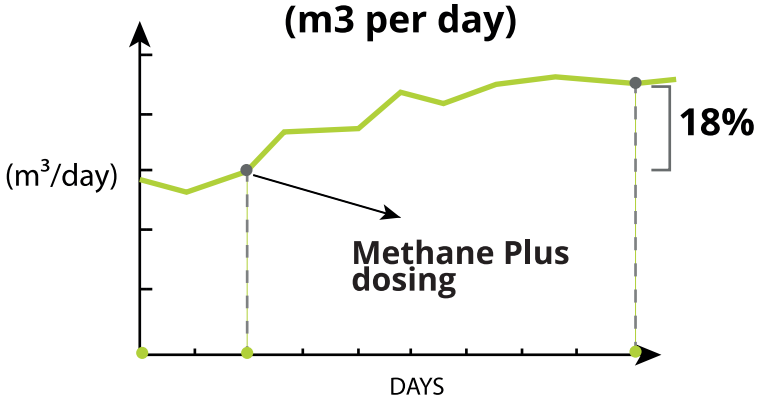
METHANE PLUS is an optimal blend of essential trace elements that meets basic requirements:
• To adapt to most biogas plants.
• To achieve a concentration in the reactor that provides the nutrients in the minimum necessary amount.
• To be bioavailable so that trace elements do not precipitate, and bacteria can incorporate them.

By following a dosage plan, we will achieve a healthy degrader population that is prepared to cope with peak loads and changes in environmental conditions.

BENEFITS

- Increases biogas/ methane production.
- Enhances system efficiency.
- Improves system stability.
- Reduce FOS/TAC ratio.
- Speeds up plant start-up.
- Improved response to plant shocks.

CASE STUDY: BIOGAS PRODUCED (m3 per day)



18% INCREASE in biogas production after METHANE PLUS dosing.

DOSAGE

Please consult our technical department, which will propose a dosing program according to the characteristics of your reactor.
Reference: 2.0 -4.0 Kg
- 12000 m3 Biogas
- 20 tn DQO / 1 MW

METHANE PLUS SIZES - Presentations

Gallons: 5,3 gal / 52,8 gal / 264 gal
Kilograms: 20 kg case/ 200 kg drum / 1000 kg bin

PRODUCT CHARACTERISTICS

Aspect: Liquid.
Color: Bluish violet.
Density: 1,03-1.13 g /ml.
pH: 7.5 - 8.5

WHERE TO USE

Complete mix anaerobic digestors, CSTRs, Covered lagoons, UASBs.

METHANE PLUS maximises biogas production and system performance.
The presence of the necessary trace elements in the system helps to minimize reactor acidification events due to the accumulation of volatile fatty acids (VFA).

BIOIMPEC

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