

PROCESS GUIDANCE

FOR OPTIMAL OPERATION & MANAGEMENT OF DIGESTION INSTALLATIONS



WHY PROCESS GUIDANCE?

The proper functioning and operation of each digestion plant or biogas plant is of great economic importance. A biogas installation with an optimal digestion process results in a high gas yield. HoSt has years of experience with process analysis and offers reliable process guidance for a continuous, optimized and stabilized process.

This analytical control of digestion processes by HoSt results in:

- Prevention of process failure or reduced gas yield due to acidification or salination of the digester;
- Maximizing gas production per tonne of product due to better conditions in the digester;
- Feeding cheaper products thanks to intensive monitoring of the installation;
- Improving the overall (economic) efficiency of the installation.

PROCESS ANALYSIS

In addition to process analysis for biogas plants, HoSt offers customer-specific process support, such as:

- Analyzing and advising on new possible nutrients (biomass menu) for the digester;
- Analyzing, assessing and supplying trace elements and;
- Maximizing gas production.

ANALYSIS OVERVIEW



pH - The pH is the measure of the acidity. The digestion works optimally at a pH between 7 and 8.

VFA - VFA stands for volatile fatty acids. During the breakdown of organic matter, volatile fatty acids are formed (step 1) which are converted into biogas (step 2). The concentration of volatile fatty acids is an indication for the balance of the 1st and 2nd step.

TAC - TAC stands for the buffer capacity and determines how high the fatty acid content can rise before the digester acidifies.

VFA/TAC - VFA/TAC represents the proportion between the concentration of fatty acids and buffering capacity and is an important parameter for the functioning of the digester.

EC - EC or conductivity is a measure of the salt content (such as sodium, potassium, magnesium). A too high salt content of the digester kills the bacteria needed for the digestion process.

NH₄ - NH₄ largely determines the buffering effect of the digestate. The higher the NH₄, the higher the fatty acid content can be before the digester acidifies. However, poisoning occurs if the NH₄ is too high.

DM/OM (Dry Matter/Organic Matter) - The DM/OM content largely determines the mixing behavior in the digester. A too high DM/OM content can result in a too thick digester content. This makes it difficult for the gas to escape and inhibits the digestion process.

N, P, K, Na, Mg - These elements influence the digestion process and are important for determining the fertilizing value of the digestate.

ANALYSIS PACKAGES & SUBSCRIPTIONS

HoSt offers various subscriptions for carefree operation of the digestion process. Each subscription consists of one or more process analysis packages, the frequency of which is optimally geared to the digestion process. For an analysis, a sample is taken from the (post) digester and the different values of the parameters are determined. These values are assessed by a process engineer which is followed by a report and advice.

| PACKAGE | PARAMETERS |
|-----------------------|---|
| DM/OM ANALYSIS | DM/OM |
| PACKAGE 1 (p1) | pH, EC, VFA/TAC |
| PACKAGE 2 (p2) | pH, EC, VFA/TAC, DM, OM |
| PACKAGE 3 (p3) | pH, EC, VFA/TAC, DM, OM, NH ₄ |
| PACKAGE 4 (p4) | pH, EC, VFA/TAC, DM, OM, NH ₄ , N-Kj |
| PACKAGE 5 (p5) | pH, EC, VFA/TAC, DM, OM, NH ₄ , N-Kj, Ptot, Ktot, Mg, Na |

Packages 1, 3 and 5 are part of the standard subscriptions below. Inquire about the options for purchasing the other packages.

YEAR SUBSCRIPTION PROCESS GUIDANCE

| Subscriptions | | Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|------------------|--------------------------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Premium | <i>Prices on request</i> | | p5 | p1 | p1 | p1 | p1 | p3 | p1 | p1 | p1 | p3 | p1 | p1 | p1 |
| Standard | <i>Prices on request</i> | | p5 | - | - | - | - | p3 | - | - | - | p3 | - | - | - |
| Essential | <i>Prices on request</i> | | p5 | - | - | - | - | - | - | - | - | - | - | - | - |

The above diagram shows the frequency and distribution of the analysis packages per subscription. Subscriptions are annual and the cycle repeats after 13 weeks. Each analysis is followed up by a report with advice. Inquire about the options for client specific process guidance.

**Prices do not include transport costs.*