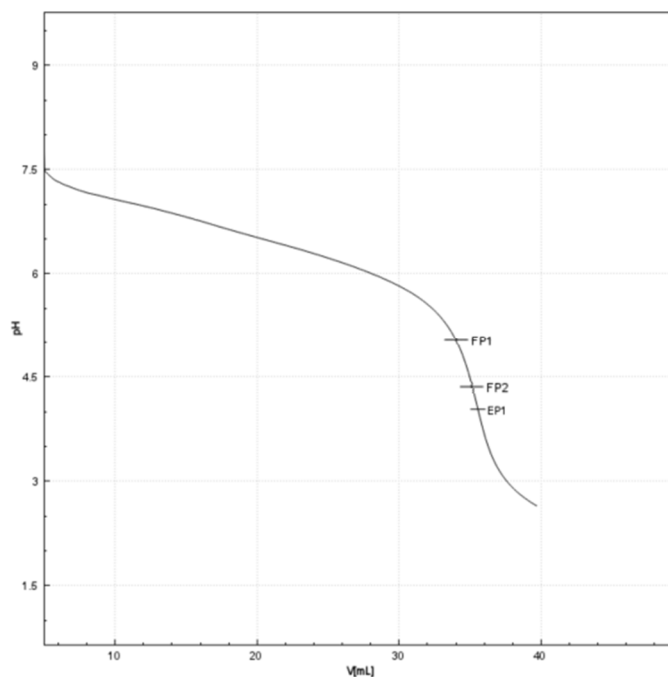


Titration Application Note T-212

FOS/TAC in fermentation substrate

Reliable determination for the monitoring of biogas plants



The FOS/TAC value, sometimes referred to as VFA/TA, is a meaningful parameter for assessing both the current condition and the development of anaerobic digestion processes in a digester of a biogas plant. Thus, critical decisions for the operation of the plant can be derived from it.

An accurate and reliable determination of the FOS/TAC value is important for the efficient and cost-effective operation of biogas plants. Knowledge of the FOS/TAC value can help decrease the risk of acidification problems, which can result in a costly crash of the entire digestion process. The FOS/TAC value is determined by an acid-base titration.

Using the Eco Titrator equipped with an Ecotrode plus electrode, a reproducible and accurate determination of the FOS/TAC value is possible.

Method description

Sample

Fermentation substrate from a biogas plant

Sample preparation

The sample is centrifuged beforehand and the supernatant is used for the titration.

Configuration



Ecotrode Plus	6.0262.100
Pt1000 temperature sensor	6.1110.100

Analysis

The FOS/TAC value in fermentation substrate is determined by a potentiometric acid-base titration with sulfuric acid. "FOS" stands for volatile fatty acids, and "TAC" stands for the total alkalinity.

Both FOS and TAC themselves provide valuable information about the status of the anaerobic fermentation process. From this ratio, the process stability of the plant can be assessed to a certain extent and decisions for the optimal operation can be derived.

Prior to the titration, the pH electrode is calibrated to obtain accurate results.

For the analysis, the centrifuged sample is diluted with deionized water and titrated with sulfuric acid to two fixed endpoints (at pH values 5.0 and 4.4). The FOS/TAC value is then determined from these endpoints.

Results

Sample (n = 6)	FOS/TAC ratio	s(rel) / %
Fermentation substrate	0.103	4.7

Summary

The Eco Titrator is very user-friendly and allows users to perform very fast analyses. Both accurate and reliable results are realized with minimal effort. The Eco Titrator is well suited for the regular and fast monitoring of the fermentation substrate and thus for the optimization of biogas production.