



Reduction of the pollution engendered by the breeding, the agricultural and food industries PILOT UNIT

The methanation of the organic effluents

Introduction

The methanation is the destruction of the organic matter contained in effluents to reduce the load and the potential harmfulness for the natural environment.

The resultant products of this transformation (processing) are:

- Some water little loaded (charged) in organic matter,
- Of the biogas which can be directly used in boiler room or to produce some electricity
- Useful mineralized muds directly in agriculture (farming)

This solution presents a double advantage: resolve a problem of treatment of organic waste and insure an autoproduction of energy.

It applies in particular to the effluents of the breeding, the poultry, the porks (pigs), bovine in battery farming and in the food-processing industry, the treatments of fruits, brewery, dairies, distilleries.

The processing by methanation is provoked in conditions controlled shielded from the air inside a called tank to digesteur.

There are numerous variants of digesteurs.

MELDOM Energies

The team of the company MELDOM energies, strong of its experience of numerous studies and realizations and the observation of existing technologies, proposes a new approach of methanation.

The criteria selected for this synthesis were the following ones:

- 1) An adjustable sequential system of introduction and which assures (insures) a good distribution of the organic matter;
- 2) An outside system of excitement (thus easily repairable, non-stop of the méthaniseur) and "not violent";
- 3) A system of "niches" and free supports convenient to the development of specific bacterial populations (absence of risk of sealing);
- 4) An outside system independent from racking of mineralized muds which does not disintegrate the bacterial communities.

These technological advantages allow to meet the expectations of carriers of projects and of investors on an optimization of the production of biogas by an easy equipment of maintenance.

In conditions to define individually MELDOM Energies suggests the implementation of an industrial semi experimental unit called **PILOT UNIT** installing on-site to reproduce, in closer, the normal conditions of use of an industrial installation.

The **PILOT UNIT** is intended to demonstrate the feasibility of the methanation of the existing effluents and to prefigure, exactly, the results(profits) which would be obtained by an industrial installation in charge of the totality of these effluents.

This **PILOT UNIT** (Figure 1) of medium height (25m³ occupy few of space to the ground (+/-50m²), it is generally placed near the source of effluents. It settles down outdoors.



Figure 1 : model of the experimental unit of methanation (cheap wines of distillery).

- A sequential introduction, a sequential admixture
- A control of the temperature, a control of the pH
- The presence of free particles which are of use as support to bacteria
- A reduction of the size of particles before introduction

- A measure permits of the production of biogas
- An extraction of data allowing to optimize the evolution of the reaction
- A follow-up computerized by all the data, available locally and remotely, for the choice of the optimal conditions.

The operator can, in view of the results:

- Modify each of the parameters described above (rhythm of introduction and mixture, temperature, pH, quantity of particles)
- If the main effluent is unbalanced we can try diverse contributions of effluents resulting from the other source to optimize the biochemical balance in the digesteur and improve the return on the set. We so obtain a better reduction of the organic load and a bigger volume of gas of better quality.

Predictable results

Unconscious of the effluents to be treated we can only give figures standard results according to previous experiences.

- Reduction of 80 % of the chemical demand(request) in oxygen (soluble DCO *)
- Reduction of 90 % of the biological demand(request) in oxygen (DBO5)
- Production of biogas in 60 % of methane (600 liters by Kg of transformed DCOs)

* The DCO (Chemical Demand in Oxygen): she allows to quantify the content in oxidizable material of the effluent.

** The DBO5 (Biological Demand in Oxygen on 5 days): it is the measure of the quantity of organic matter that will be degraded in 5 days by bacteria. It is thus a measure of the easily degradable organic matter.