

# YOUR ADVANTAGES



- ✓ More profit
- ✓ Shorter retention time  
= smaller digestion volume  
= lower CAPEX
- ✓ More biogas from  
the same feedstock
- ✓ Feedstock flexibility with  
cheaper feedstock
- ✓ Lower OPEX
- ✓ Higher full load hours



Go the safe way  
for your biogas plant.

## Choose SLP!

If you want to get the details right  
and look for a biogas plant giving you highest  
yields and worry-free operation from fibrous  
feedstock, **contact us!**

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You should not end up with just a tank  
somehow producing biogas.  
Only when you get  
all the details right,  
your biogas plant  
will be working  
efficiently and  
give you profit.



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## ONLY 2 STEPS

to a Biogas Technology for Difficult Feedstocks,  
such as Napier grass, rice straw and manure.

Are you looking for a biogas technology  
and feel a bit overwhelmed by so many  
information, technologies and providers?  
We felt similar 30 years ago!

35% higher biogas yields  
compared to regular  
Single-Stage Biogas Plants.



After several bad experiences, we had to  
develop our own system for difficult feedstock  
like grass, straw and others to get highest  
biogas yields out, while still having the plant  
running smoothly during daily operation.  
We were the investor and risked our own  
money. We wanted to win and make profit.  
Loosing was not an option.

**You want a biogas plant,  
a process technology, which works  
efficiently and reliable.**

## WE. HAVE. IT.



# Maybe, you don't know that you don't know what you don't know.

The key to success and profit in biogas is in the details. Everyone can build tanks, install mixers and put feedstock into the tank. And it works – more or less. Getting only 80% right will give you some biogas, but most probably no profit.

The key details are in the biology – **NOT in technology, NOT in concrete, NOT in steel.** The key to success is in temperature, pH, organic loading rate (OLR).

A biogas plant after all is a biological process, not a mechanical one. What you get yourself with a biogas plant is a tank full of small creatures, called bacteria, working for you.

We discovered that a rise in temperature of only 1°C leads to a doubling of the enzyme activity to breakdown cellulose and other biomass. So, we operate our biogas plants hyper-thermophilic up to 60 °C.

**This gives us speed!**

We discovered that cellulase, enzymes, which breakdown cellulose, operate best at pH 6.8 -7.2. So, we developed a process with an OLR of 50 -120 kg VS/m<sup>3</sup> per day to bring down the pH from 8 to 7. No chemicals added!

**This gives us efficiency!**

We discovered that having small pre-digesters not only makes a perfect environment for the biological process of the bacteria, but also makes the process more controllable.

**This gives us stability!**

## SLP – more than 30 years in biogas!

We were successful with our own biogas plants in the 1990s with biowaste. Later we were asked to engineer, build and operate >50 biogas plants in 14 countries on 4 continents.

Small (10 kW containerized) and huge (4,5 MW) biogas plants for biomethane production. In Germany, in India, UK, Spain, Chile, Africa.



**We use and have used as feedstock: Energy crops such as Napier grass, maize, barley, grass, etc.**

**Agricultural by-products as paddy straw, wheat straw, horse manure, cow manure, chicken manure, pig manure  
Biowaste, food industry waste, waste water treatment sludge, slaughterhouse waste**

Our experience in various countries with various feedstock taught us that biogas plants work basically the same everywhere but different in details. These details count for your success.

## Your Safety Plan

**A 2-Stage Biogas Plant with 35% Higher Yield  
Compared to Single Stage Biogas Plants**

Most of the biogas plants have only one biological step – so called Single-Stage biogas plants. They digest like pigs. A pig has one stomach. So has the single stage biogas plant (= 1 tank) and everything is fed into it. Everyone tells you this is the way it works: Build a tank, put everything into it, biogas comes out. But this is not the way it works, at least not in our experience. If you want to digest fibrous biomass such as Napier grass, paddy straw, straw or straw based manure, the key is biology and the environment for bacteria.

**Our SLP 2-Stage Process works like the digestion system of a cow.**

Our small High-Load Pre-Digester (or Hydrolysis Tank) works like the paunch of a cow. Once fed in one batch, the cow digests the fibres in the paunch down to fatty acids. So do we in our Pre-Digester. We create the perfect environment for bacteria and their enzymes for highest performance and highest biogas output.

Our SLP process is like a cow (2-Stage Process), which can digest grass and straw.

Have you ever seen a pig (Single-Stage) being fed and growing from grass and straw?

**See, this is why we do not put pigs on grassland to mow. Whereas we all can picture cows on green meadows.**

## 2-Stage - the Key to Success

