

# IN farmer

## UTS REFERENCE PROJECT

Hellweg

## UTS REPOWERING

Long-term storage facility

## EFFICIENT IMMERSION TECHNIQUE

PSM submersible mixer

## UTS PUMP TECHNIQUE

Pumps









Dear customers,  
dear UTS fans,

First of all we would like to thank you for the very positive feedback to our first edition of INfarmer. When we decided to set up our new customer magazine, we weren't sure whether it would really be widely read, but your feedback has exceeded our wildest expectations.

The focus in this new edition of INfarmer is on „performance improvement“, also known as „repowering“ in biogas circles. So what is this all about? Two keywords are used quite frequently in this context: efficiency and effectiveness. You may wonder if there is any difference in meaning between these two keywords. Well, yes there is, because effectiveness is primarily about getting closer to one's goal, whereas efficiency is about achieving one's goal with minimum use of resources. Or to put it briefly:

Effectiveness is: doing the right things!  
Efficiency is: doing things right!

And this is precisely our principle when we work together on projects with you, our customers. The first step we take together is to analyse what we can do to improve your biogas plant. The next question is how best to achieve this goal. This process leads to an intelligent repowering concept, an element of which is the use of our PSM mixers to increase the efficiency of the biogas plant through efficient mixing technology.

This may sound quite abstract, but we are going to explain this to you in detail in the following pages and illustrate this by real-life examples.

I hope that you will enjoy reading this issue and that you will learn a lot from it that will make your daily work more effective and more efficient. Please let me know what you think of this second issue of INfarmer. I look forward to receiving your feedback!

Kind regards

A handwritten signature in blue ink, appearing to read 'St. Kaiser', written in a cursive style.

Stefan Kaiser  
Managing Director of UTS Products GmbH





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HELLWEG

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## LEGAL NOTICE

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UTS Products GmbH  
Oestinghausener Str. 12  
59510 Lippetal  
phone: +49 2923 610 94 0  
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## Editorial staff:

Sonja Grage, UTS Products  
Jens Schönlau, sku:l communication

## Concept and realization:

Plan B Marketing  
Möhnestraße 55  
59755 Arnsberg  
phone: +49 2932 899722  
[www.planb-suedwestfalen.de](http://www.planb-suedwestfalen.de)

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# SIGNIFICANTLY HIGHER EFFICIENCY FOR BETTER YIELDS

## UTS REPOWERING

**Biogas plants are complex structures and plant operators are very much aware of this. You are happy if your investment runs smoothly and is yielding good returns for you.**

**But have you ever considered tuning your plant a little, or as much as possible, using UTS Repowering? How about getting more out of your plant by adjusting the right switches to significantly increase overall efficiency and profitability?**

In the future, biogas will play an increasingly important role in Germany's energy transition. After all, coal is planned to be phased out in the future and the share of renewable energy in gross electricity consump-

tion should be increased to 65% by 2030. The German Federal Government has committed itself to this.

This is a good basis for sustainable investments in the future and especially also for the repowering of biogas plants because they have a major advantage to offer:

they can be switched on and off and can produce electricity at the exact moment when electricity from wind power or photovoltaics is not available and when electricity prices are likely to peak which will be great for your financial returns.

### INTELLIGENT REPOWERING

At UTS, together with research and development partners, we are always working on new methods and techno-

logies for highly efficient biogas plants. We look at the entire value chain for this. It starts with the optimising of fermentation biology.

An example of how you can make an investment in the efficiency of your plant that will pay itself back very quickly is by converting to the latest UTS PSM mixing technology. The system saves energy, is extremely robust and fail-safe, ensures continuous flow in the fermenter, and ultimately increases gas yields.

It also gets more out of the energy content of the substrate used. And it enables changing over from an expensive substrate like maize silage to liquid manure or grass silage, or, in the future, residual materials from the waste collection industry, e.g. collected organic waste.



What it basically boils down to is that the possibilities for repowering an individual plant should always be monitored and the measures that will bring the best return should be implemented. A study by the German Biomass Research Centre (DBFZ) has shown that this is a profitable investment. A total of 241 plant operators (predominantly with plants with outputs ranging from 150 to over 1,000 kW) were interviewed. They carried out a total of 829 repowering measures.

According to the operators, the following repowering measures were particularly successful in terms of economic efficiency:

- 1) expanding heat utilisation/heat storage capacity
- 2) increasing the CHP capacity/  
replacing old CHP units
- 3) using raw gas pipelines/satellite CHP units
- 4) substrate processing/adjustment and increasing the fermentation volume/gas-tight covering of the fermentation residue storage facility

### **SPECIALISING IN REPOWERING**

We have planned, built and/or equipped more than 1,600 biogas plants with leading UTS plant equipment - perhaps yours as well. In addition, we have implemented repowering measures in many projects in order to significantly increase profitability through higher operating efficiencies and minimised emissions.

Repowering enables you to benefit from our state-of-the-art, mature plant technology, know-how and experience. We deliver exactly what you want, need, and what will be profitable for you - from individual measures to a complete package including container construction.





### ACT FLEXIBLY AND BENEFIT

You use your biogas plant to produce electricity which you feed into the medium-voltage distribution grid (up to 50 kV) via grid connection points. Electricity from wind turbines and photovoltaic plants is also fed into this distribution grid.

There is a distinct disadvantage to this for you:

When there is a lot of wind and/or sunshine, a lot of electricity will be fed into the 50kV grid. Since supply and demand determine the price, electricity prices will then decrease and so will your earnings. How about only producing electricity and feeding it into the grid when prices are at their highest? When there is no wind, when it is raining, or at night? You can do this by repowering your plant to make it suitable for more flexible use.

Together with TH Ingolstadt and Prologis Energie Consulting GmbH, we have found out how this works through

the FlexFuture project for integration of biogas plants in networks with a high proportion of fluctuating electricity producers.

The solution to the problem lies in a combination of extended gas storage, installing additional CHP capacity, and a control concept for the automated and distribution grid-oriented operation of the biogas plant. This is less complicated than it may sound. Our intelligent control system uses weather and irradiation forecasts, the price development on the Epex Spot electricity exchange, and the level in the biogas storage facility to create an up-to-date 32-hour schedule for when the plant should be producing energy and when it should not. This both serves to help stabilise electricity grids and to increase your revenues. You sell your electricity at the best possible price.

And this is not just theory. It actually works like this in real life. As part of the project, we tested a biogas plant in Zellerfeld/ Bavaria with a corres-

ponding plant control system and the matching storage and CHP capacities in flexible mode. The result was utterly convincing. Fluctuations in the electricity grid could be balanced out while, at the same time, earnings increased.

As you can see, repowering opens up many, versatile possibilities. We would be happy to look at your plant and develop repowering ideas and measures for you and with you. Increase the efficiency and profitability of your biogas plant with UTS and let us make an important contribution to the success of the energy transition together. ■







## UTS REPOWERING PRODUCTS AND SERVICES

- ✓ Optimised **mixer, PSM**
- ✓ Optimised **pump technology, frequency converter control, alternative pump technologies**
- ✓ Optimised **feeding technology**
- ✓ Retrofitting of **gas and substrate pipelines** according to the German Water Resources Act (WHG)
- ✓ Retrofitting of **sensors** according to German legislation on installations for handling substances hazardous to water (AwSV)
- ✓ **Supply and installation of gas cleaning systems** including compressors and pipeline construction
- ✓ **Retrofitting of long-term storage facilities**, also as the **Main Contractor**
- ✓ **Delivery of complete container equipment**
  - pumps and mixers
  - pipeline construction
  - sensor technology
  - control systems
  - complete assembly
- ✓ **Expansion of long-term storage facilities** to comply with statutory provisions on the application of fertilisers
- ✓ **Flexibilisation** through retrofitting of gas cooling systems and activated carbon filters
- ✓ **Gas piping** for flexible CHP units
- ✓ and much more ...

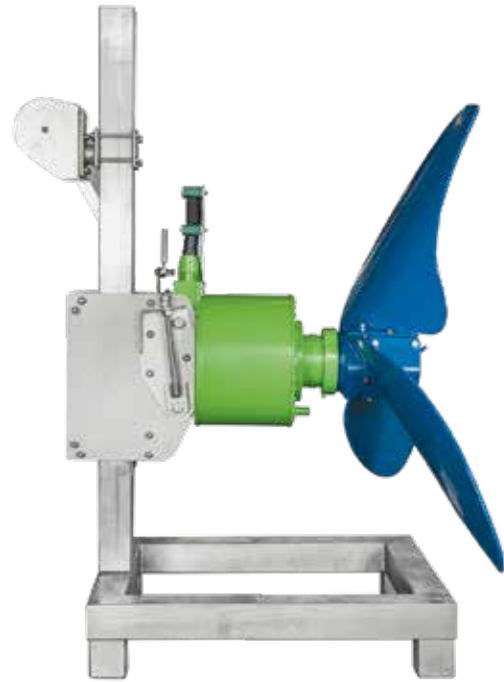




**STIRRED, NOT SHAKEN!**

**INCREASE YIELDS WITH THE PSM SUBMERSIBLE MIXER**





### REPOWERING. REPOWERING. REPOWERING.

**Repowering is the buzz word for biogas plant operators because, in the end, all the effort and time spent on designs, calculations, applications, implementation, on-site appointments etc. should pay off. That is logical. Nobody wants to be left with the feeling that, in spite of making all these efforts, they have not achieved optimum returns from their plants. That, at the end of the day, energy has been wasted, potentials have not been leveraged, and money has been thrown away.**

At UTS, in 2013, we already tackled an issue that had been troubling lots of operators for some time. The keyword is 'mixing technology'. Inefficiency, sub-optimal operation and downtimes were common problems in those days, and unfortunately still today in many cases. That is why we started the PSM project with several development partners and went on the mixing technology offensive. The key questions were: What are the weak points? How can improvements be made? It's easy to discover the obvious problems when things do not work as well as they should. But when it comes to not only improving things, but to consistently optimising them in all

respects, things become much harder. This not only calls for know-how and an understanding of technology, but also for hard work. This is not something one just does as an afterthought. And this explains why we are presently the only supplier in the market to offer a mixer that achieves optimum energy efficiency, operational efficiency and reliability.

### RELIABILITY, AN IMPORTANT TOPIC

Farmers know only too well what consequences system failures can have. It's code red. And this is something nobody wants. The biogas plant must be running, functioning, and paying for itself. Bottom line. That is why we focussed on eliminating all sources of error when developing our new PSM submersible mixer.

Our UTS system uses a generously dimensioned, highly efficient electric motor without a gear unit. Because there is no gear unit, it cannot wear out or fail. The motor, which is continuously controlled by a DMC (Dynamic Mixer Controller), delivers just what is needed in terms of speed and torque, giving you the smoothest and most efficient operation possible. The double spread below contains a calculation of the financial gains this can save per year. Or would save if you traded in your old system for a new one. This is especi-

ally true if you have not installed any UTS units yet.

Failures can also be caused by leaks in the system. With a UTS PSM TRG-E-PSM-940/1500 submersible mixer, we have made these leaks a thing of the past. We have not heard of any yet. What have we done? We have placed the motor in an extremely robust housing and provided this with a multi-stage seal with sliding ring seals and a sealing chamber with leakage monitoring. Nothing gets in, nothing gets out, no blackout. Sealed. And if any liquid would enter, this will immediately be reported by the leakage sensor.

What's in it for you? Firstly, much, much higher reliability. And, of course, significantly lower maintenance and wear costs. You won't have to service or replace any gear units, you will be spared any damage from moisture inside the motor, and you can rely on the motor, which has been tuned for mixer and durability, to keep running. It might be a good idea to study the maintenance cost history of the mixer in your plant. Just check your folders with invoices. And there is an important extra benefit to our mixer which shouldn't be ignored: ATEX approval (II 2 G Ex e IIA T1 Gb) enables it to be used in all containers with explosive mixtures.



## AND NOW THE HARD FACTS

### THE FIGURES

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It's time to get more specific. What is the real benefit of converting to a UTS PSM mixer? The annual savings? What can you expect? Of course, your investment in repowering should pay for itself and also should yield a profit.

#### **YOU CAN SAVE 50 % ON ENERGY COSTS**

How? The speed and torque of your PSM submersible mixer are permanently controlled. Not too fast, not too slow, not too high, not too low. And it should only run when really needed. In the end, this saves energy, as does the optimum energy efficiency class of the high-quality submersible motor. We have compared this against competitors' products. How we got these figures? Let's look at the example of a 500-kW plant.

Comparing measurements result in following outcome: you save 9 kW of electrical energy per hour of mixing time which amounts to a considerable sum per year. See calculation (example 1).

#### **SIGNIFICANTLY HIGHER GAS YIELD**

Key advantages of the system are its intelligent motor control (DMC), high torque (up to 800 Nm), and the carefully developed geometry of the mixer blade. This combination enables optimum flows to achieve gentle metabolic/gas exchange processes for the bacteria and uniform mixing of the entire fermenter.

The mixing process is optimised and the hydraulic retention time (HRT) is extended. In the 500-kW example, capacity utilisation is increased by

5%, leading to a correspondingly higher gas yield. This also reduces the storage space needed and it decreases production costs. See calculation (example 2).

#### **COST ADVANTAGE OF CHANGING OVER TO ANOTHER SUBSTRATE**

The powerful UTS PSM submersible mixer can generate a shearing force of up to 5.3 kN. This enables you to switch over to lower cost substrates with high dry matter content, such as grass or manure. Any problem fibres or large chunks of substrate are shredded finely by the extremely robust steel propellers, resulting in optimum circulation and avoiding any sedimentation or floating layers.

In the example of our 500-kW plant, changing over to grass or manure



would bring the following return. See calculation (example 3).



### BOTTOM LINE

The figures presented here are based on experience and comparative measurements of several different plants. We would be happy to do the sums for you to see what this would mean in your specific situation.

But there's one thing we can tell you for certain: you are bound to benefit! Not only will your plant's uptime and reliability improve, but you will also benefit from the fact that you need less energy to operate your plant, your mixer maintenance costs will be minimised, and your gas yield will increase significantly. And if you decide to change over to another substrate, you can even reduce your costs further.

Adding up the figures from our examples resulting in an amount of €58,922 a year, which is available to you for the investment and an increase in return. Would this amount be a reason for you to consider retrofitting your system? Then get in touch with us and let's talk. ■

$$9 \text{ kWh} \times 12 \text{ h of mixing time a day} \times 365 \times 0.22 \text{ €/kWh} = \text{€ 8,672}$$

#### Calculation (example 1) Savings through lower energy consumption

$$500 \text{ kW} \times 8,200 \text{ operating hours} \times \text{€}0.16 \text{ kWh} \times 5 \% = \text{€ 32,000}$$

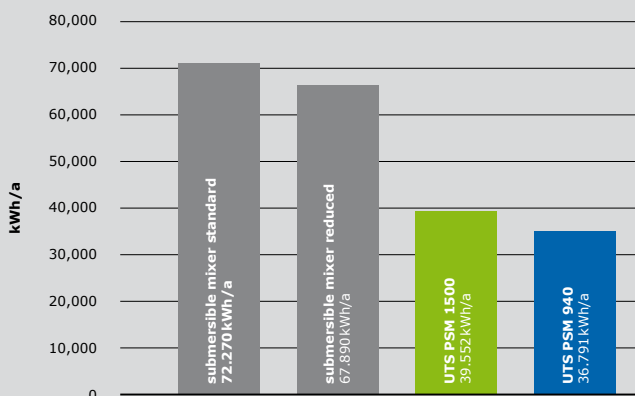
#### Calculation (example 2) Additional return through 5% increase in efficiency

$$25 \text{ t/d} \times 365 \text{ d/a} = 9,125 \text{ t/a}$$

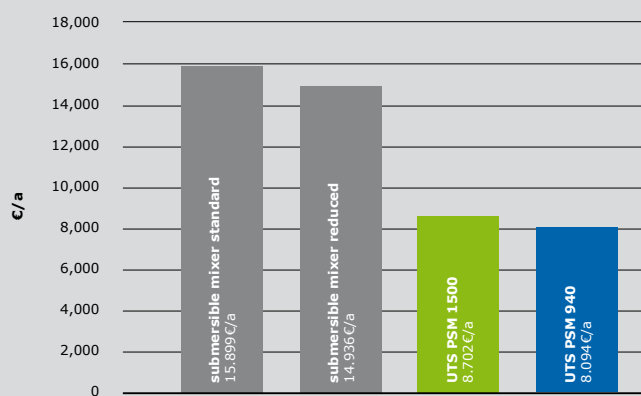
$$9,125 \text{ t/a} \times \text{€/t} 40 \times 5 \% = \text{€ 18,250}$$

#### Calculation (example 3) Savings by use of lower costs substrates such as gras or manure

energy consumption

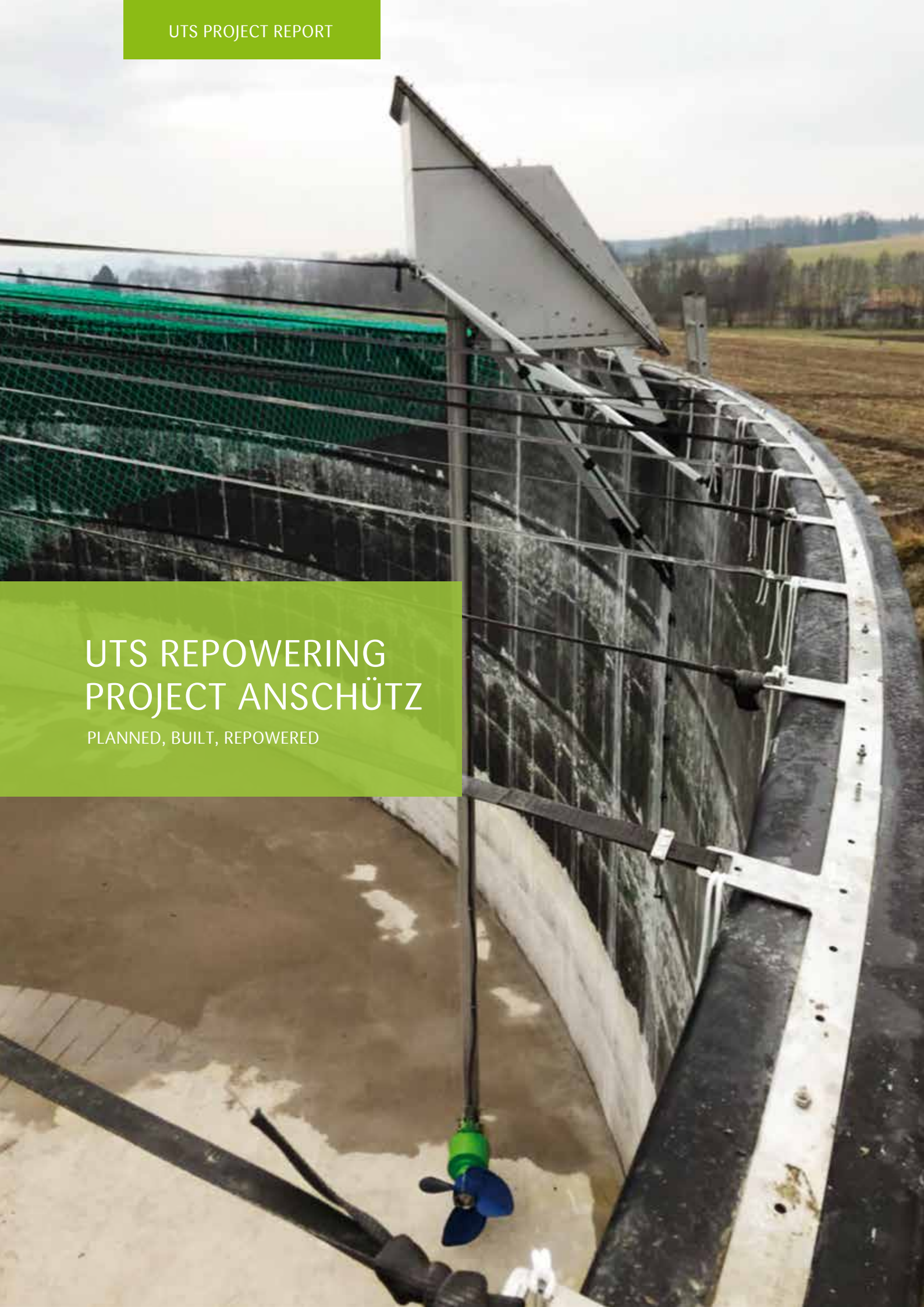


electricity costs of 0,22€/kW



# UTS REPOWERING PROJECT ANSCHÜTZ

PLANNED, BUILT, REPOWERED







**In 2009, Monika and Klaus An-schütz decided to restructure their farm operations in Reu-tern/Bad Griesbach, Germany, in order to increase their earnings and secure their future by establishing a second source of income.**

Until then, their focus had been exclusively on pig fattening (1,850 fattening places) and arable farming (170 ha of arable land). By investing in a 250-kW biogas plant, they not only became permanent consumers of their own produce, but they could also use the liquid manure from their pigs to produce biogas. The contract for the design and construction of the plant was awarded to UTS Bio-gastechnik GmbH.

The biogas produced was used to operate a CHP unit. The resulting electricity was, and is, fed into the grid, and the waste heat is supplied to over 40 households and various businesses in their town through a district heating network.

### **EXPANSION AND REPOWERING**

By now, their plant has been extended by a second 250-kW CHP unit. In 2010, Mr Anschütz decided to expand the plant and increase capacities. UTS extended the concept by adding a post-fermenter to increase the gas yield.

UTS supplied and installed all the equipment for the extension. Comprehensive repowering including flexibilisation took place in 2018. The contract, including planning and implementation, was again awarded to UTS.

The aim was to expand the installed capacity to a total of 1.3 MW and to enable the flexible use of biogas and flexible electricity generation, based on current market prices for electricity. Besides installing the piping for the two Flex CHPs (including gas cleaning using a compressor station), the focus was on expanding the plant with a new storage facility.

UTS supplied and installed all the equipment for the long-term storage facility: two service boxes per foil roof, two PSM 125-940-3-150 mixers, the pump equipment including a UTS ZPS centrifugal pump, as well as all sensors.

UTS also constructed the pipelines for substrate and gas, and expanded the existing control system. All in all, the expansion and repowering measures have significantly increased the overall energy efficiency and profitability of the entire plant.

This example once again shows that there are still plenty of opportunities for improvements in many biogas plants. Maybe also in yours... ■







# UTS PUMPS

PUMPING. PUMPING. PUMPING.



# EVEN WHEN THE GOING GETS TOUGH

## UTS PUMPS

---

**The pump series 3000 and 4000 are by now our thousandfold successfully proven timeless classics.**

Their main feature: every aspect of their design is tailored towards giving them the robustness to enable them to keep pumping even under the most difficult conditions.

But that's not all. The systems pump and tear in order to be able to convey thick, solid media such as slurry

or fermentation substrate in biogas plants (4000 series) in a controlled and safe way.

This makes them resistant to foreign objects, brings the benefit of very low maintenance requirements, minimises their lifecycle costs, and leads to a very low risk of failure. This is also helped by design features such as the multiple-bearing drive shaft which runs in an oil bath, as well as the sliding rings seals with

an oil reservoir to protect against the shaft running dry. Or the specially designed spiral housing with safe protection against clogging.

Both pump series are also designed for large tank depths and can be combined with several types of drive. Lots of options, as well as a wide range of accessories, enable the optimum configuration to be designed for the specific pump operation in question.



ZPS 4000 (central pumping station)

## UTS SERIES 3000

- Delivery up to 200 m<sup>3</sup>/h
- Suitable for thick matter up to 8% dry substance
- Delivery head up to 20 mWS
- Robust impeller with armoured cutting edges

## UTS DRP 3000/ 4000 SERIES PUMPS: PRESS, TEAR AND MIX

### DRP 3000 E / 4000 E

- Long shaft pumps with e-motors

### DRP 3000 S / 4000 S

- Long shaft pumps with a mitre gear for tractor operation

### DRP 4000 E / T

- Submersible motor pumps

### ZPS 4000 E

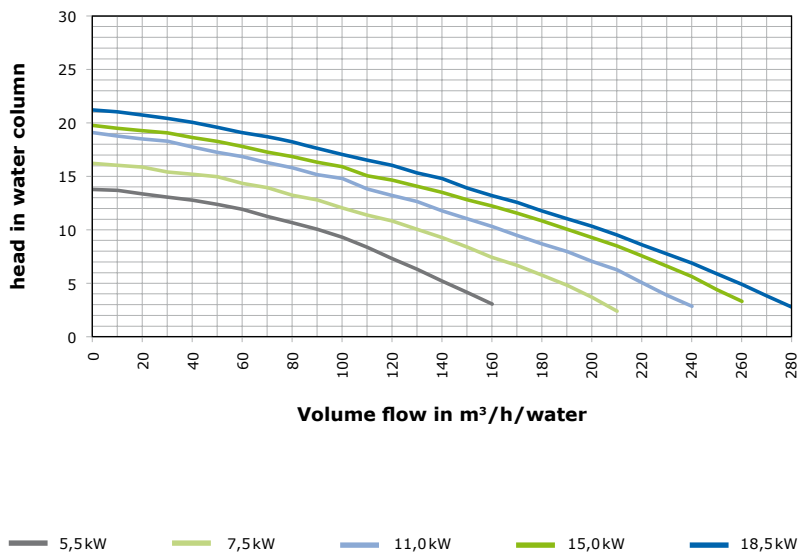
- Central unit installed in a dry location Pumping station
- Storage tank and multi-optional suction connections for various delivery tasks
- Fully automatic substrate control

### RPM 4000 E

- INLINE pump installed in a dry location
- Closed design
- Minimised odour emission



PUMP CHARACTERISTIC HRP 3000 E/T





## UTS SERIES 4000

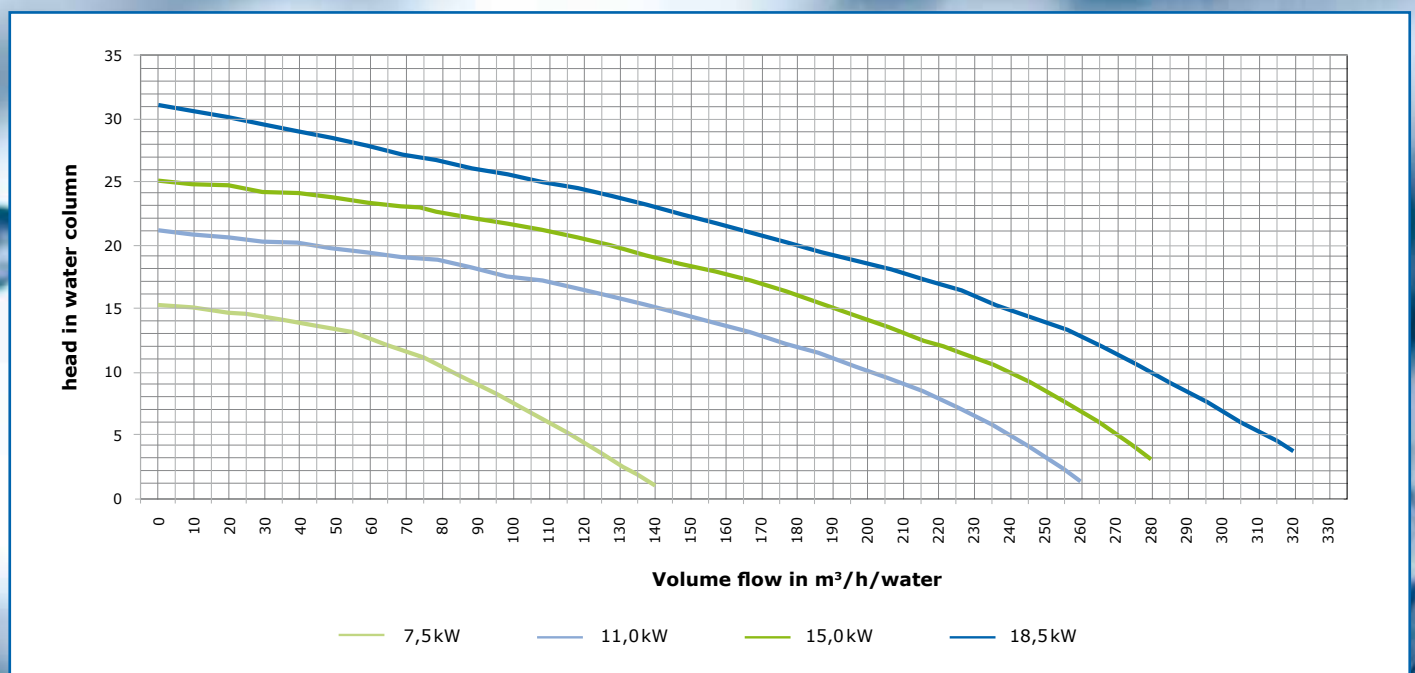
- Delivery up to 320 m<sup>3</sup>/h
- Suitable for thick matter up to 12% dry substance
- Delivery head up to 45 mWS
- Does not get clogged up by straw or feed residues
- Very high cutting performance
- Impeller with an armoured WIDIA intake auger
- Robust intake cage with WIDIA armoring and counter-cutting edges
- Keeps delivering where other systems have long failed
- Also suitable for use in biogas plants

## ACCESSORIES AND OPTIONS

- Design and overall length depending on pit depth and shape
- Drive depending on requirements
- Above-ground and underfloor designs
- Lifting and lowering devices
- Mobile configurations
- Lifting frame for attachment to the rear of a tractor
- Lift chassis
- Mixing devices
- Optionally with one or two mixing nozzle(s)
- mixing nozzle with a double joint
- Mounting fixtures
- Wall or ceiling bracket
- Support leg with a catch
- Electrical controls and switchgear
- Measuring and control technology



PUMP CHARACTERISTIC DRP 4000 E/T





# WHERE TO KEEP THE RESIDUES?

UTS LONG-TERM STORAGE FACILITY

## The topic of fermentation residues and how to handle them is a science in its own right.

In a best-case scenario, substrate enters the fermenter from which it goes to the secondary fermenter to increase the gas yield and it is then transported to the long-term storage facility or the fermentation residue storage facility where it is kept until it is spread onto the operator's own land. Sounds like a simple circular principle. However, it is not that simple in real life. On the one hand, this is because biogas plants are changing as a result of repowering and flexibilisation measures.

On the other hand, there are many existing and new laws and regulations on how to handle and use fermentation residues.

## REPOWERING AND FLEXIBILISATION

Optimised performance, higher yields. In this magazine, which focuses on repowering and flexibilisation, we would like to present the various 'tuning devices' that are available to biogas plant operators.

These measures often also lead to more fermentation residues being produced, especially if performance is increased by increasing the substrate input

The obvious question then is: What to do with these residues? This is not an easy subject, especially since it also involves costs and overall profitability. But we would be happy to put our long experience at your disposal to help you find the best solution.

## LAWS, REGULATIONS, BONUS

Various rules and regulations must be considered and their effects evaluated in order to optimally integrate the handling and utilisation of fermentation residues into the plant concept. Examples are the German Renewable Energies Act (EEG), the German Ordinance on Facilities Handling Substances Hazardous to Water (AwSV), the German Ordinance on Installations Requiring Approval (according to the German Federal Emission Control Act (BImSchV)) or the German Fertiliser Ordinance (DüV) - to name but a few. Not only do all these laws and regulations exist, they are also continually being amended and expanded. In addition, there are the various bonuses under the German Renewable Energies Act that affect the economic efficiency and handling of fermentation





substrates and other substrates: a 'flex premium', combined heat and power (CHP) or electricity from renewable raw materials.

### WHAT SHOULD YOU DO?

First of all, keep calm and ask for advice. We are always happy to help you design and optimise the fermentation residue handling of your biogas plant

in the context of repowering and flexibilisation, taking into account the legal provisions. This can be done, for example, by building a new or additional fermentation residue storage facility or by separating fermentation residues. The best options have to be planned and calculated individually as there is no general solution. UTS is your number one specialist with the relevant know-how and

technology (e.g. energy-saving PSM mixers, pumps, FSP separators...). Everything carefully considered and coordinated under one roof. And since you have only one contact person, there is very little risk of any misunderstandings. If fermentation residues is a hot topic for you, then please give us a call. ■



# WHY WOULDN'T YOU THINK OF EVERYTHING RIGHT FROM THE START?

HELLWEG UTS BIOGAS PLANT PROJECT

**In general, biogas plants are a good investment, provided that they are planned, designed and constructed wisely and with common sense from the very beginning. This is how UTS works. Why? Because we like to get things done. As our American parent company might put it, we want to make an impact.**

**We go for plants where every single detail has been carefully considered. Plants that safeguard optimum output and minimum emissions, without any concessions. And which are ready for the future.**

Our plants can be adapted and expanded in line with business developments and developments in society (legislation, regulations, political targets...). And last but

not least, our plants always deliver their full potential. No trial and error, but through a meticulous approach. Down to the last detail.

Sounds good, doesn't it? How do we do this? By taking things step by step, and always working closely together with our customers. Biogas plants start with the substrate. What is available, how much is available, and what does it cost? We use this information to calculate and design the technically most efficient substrate pre-treatment and fermentation methods in order to reduce methane losses, minimise energy consumption - for example for the mixers -, and maximise gas yield. And, of course, we also pay attention to the downstream processes and the further approach to be followed.

What happens to the gas? How can

it best be marketed? What happens to the heat generated in the CHP plants? Are there any potential consumers for it? Does it pay to invest in a satellite CHP plant, one connected through a micro gas network? How can the fermentation residues also be put to optimum, profitable use? In the project that is the subject of this article, our client did a great job preparing the project and presented us with a carefully considered, comprehensive, marketing and operating concept. We advised and assisted them on its further development.

Their basic concept was an excellent basis for us to design and construct an optimum biogas plant. To be able to do this, you need to know all the ins and outs of the entire process, and to be able to do your calculations. We are. An example?



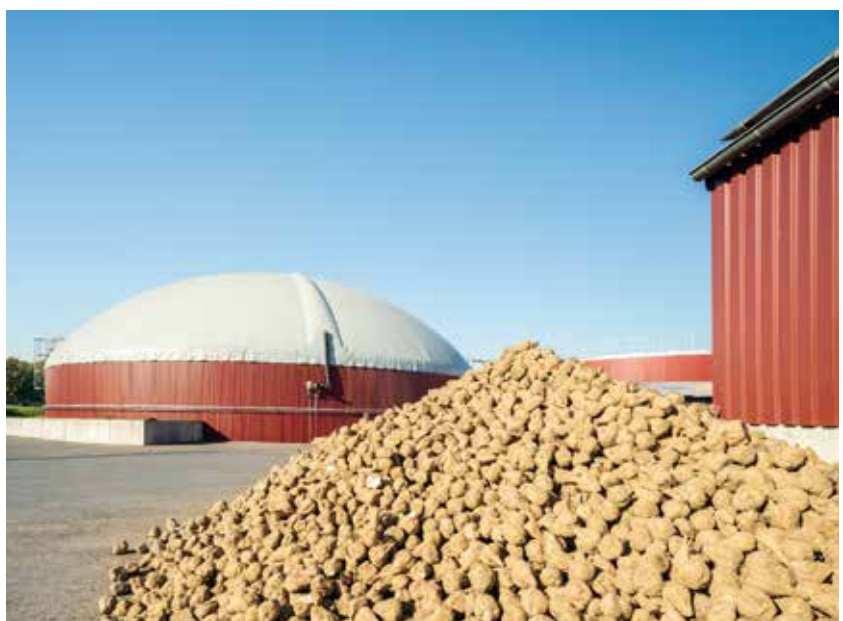
## THE HELLWEG BIOGAS PLANT

Imagine a small town in Westphalia, Germany. The town of Büderich is situated in the heart of the very fertile Soester Börde area which is dominated by agriculture. Here, three farmers, Thomas Hagen, Heinrich Schubert and Heinz-Josef Stute-Schlamme, joined forces to create a forward-looking project to ensure a good future for their region: they decided to build a highly efficient and powerful biogas plant which would offer their companies several advantages. The plant is a constant consumer of the produce from the farmers' own fields, but it also refines and utilises manure and slurry from pig and chicken fattening and cattle breeding.

UTS, situated in the neighbouring district in Lippetal, was contacted and decided to be the right biogas plant specialist and adviser, one that was able to help them turn their idea into a clever, properly substantiated plant concept. The farmers founded Bioenergie Hellweg GmbH & Co KG and commissioned UTS to design and build their biogas plant.

## THE MARKETING CONCEPT

In order for the system to yield optimum results, takers for the electricity and generated heat had to be located. For this purpose, the targeted total output of 500 kW was split up. One 250-kW CHP plant now supplies 15 neighbouring houses and a wood chips, grain and corn maize drying plant via a local heat network. The electricity generated is fed into the grid at a fixed price, supported by a 20-year subsidy under the German Renewable Energy Sources Act (EEG). A second 250-kW CHP plant was built as a satellite CHP plant next to a 220-bed hospital, one mile from the biogas plant. It covers 92 % of the heat requirements of the hospital and is supplied with Hellweg biogas via a micro gas network (150-mm pipelines, installed by means of wash boring). The heat utilisation of both CHP plants has led to a further subsidy in the form of a CHP bonus, something which has increased the overall high profitability of the plant even more.





# HAPPY WITH UTS

PROJECT HELLWEG

## ABSORBING MARKET FLUCTUATIONS

The key advantage of a biogas plant for farmers: it enables them to compensate for the risk of market and price fluctuations for their own agricultural produce. Besides producing for their agricultural core business, farmers now also produce for their own power generation plant.

Operating the Hellweg biogas plant requires some 6,500 tons (i.e. metric tons) of maize and 1,000 tons of sugar beet a year. This is used to convert 1,000 tons of chicken manure, 2,500 tons of pig manure and 1,000 m<sup>3</sup> of cattle manure from a neighbouring farm into electricity and heat, as well as into high-quality organic manure.

## WHAT HAS UTS DONE?

Quite a lot actually! First of all, we meticulously designed the biogas plant and took on the role of site manager during the actual building phase. Furthermore, a major share of the plant technology was produced by us: fermenters, pumps, feeding facilities and separation. We have retrofitted the latter in order to optimise the removal and utilisation of fermentation residue. The system has been designed to prevent these residues from settling at the bottom of the slurry tanks. They can be pumped out quite easily and applied directly in or close to the soil.

## THE NEXT STEP

After the plant had been success-





fully started up and had proven its long-term worth, Hellweg GmbH & Co. KG started the next expansion stage aimed at repowering and flexibilisation. A second 250-kW CHP unit was put into use at the site of the biogas plant, and a further 350-kW unit is planned at the hospital. This will make more thermal energy available to be sold and it will enable the company to react more flexibly to fluctuating demand and electricity prices. This is an important factor in securing and expanding overall profitability in the long-term, so also after the 20-year EEG subsidy has expired.

### WHY UTS?

Since we are always curious to know why a customer has chosen us, we have also asked these customers this question. The reason why they first contacted us was the combination of our good references and the fact that our company was located so near to them. And it did not take us long to convince Hellweg that we were definitely not newcomers to the market and that we knew what we were doing. Our wide range of services (from design to pipeline construction and building management), and our product portfolio with its many technological highlights (ser-

vice boxes, hydraulic mixers, solids feeding), also helped in this respect. Further positive points: the long service lives of our products, our installed base of biogas plants, and the high safety standards that form the basis of our operations.

### AND WHAT DO OUR CUSTOMERS HAVE TO SAY ABOUT THIS?

Well, let's have them speak for themselves. Thomas Hagen, one of the managing directors of Hellweg: „Looking back, now that the plant has been operational for over 6 years, we are very happy that we

decided to go with UTS. We greatly value the high-quality construction and the good maintenance possibilities. For example, one particular advantage is the UTS service boxes which enable us to quickly maintain and repair the mixers at low cost. The separator has now been in operation for 5 years and we value the low costs of the wear and replacement parts. For us, the separator is an important link in the farm manure processing chain. It simplifies and optimises fertilisation, especially when it is applied directly in the soil or close to the ground.” ■



Arndt Schubert, Heinz-Josef Stute-Schlamme, Heiner Schubert, Thomas Hagen and Marc Stute-Schlamme (from left to right).



# UTS SERVICE TECHNICIAN WITH PASSION

KLAUS EDER





**Service is currently on everybody's lips. Everybody wants to both have and offer good service. Naturally all companies claim that their service is perfect. But how does this work out in practice? Well, no one can afford to offer a poor service anymore. Good service is the minimum requirement. But how can you ensure a really good service?**

Well, it starts with the right people. People who live and breathe service. We have these people at UTS. Putting together a really good team is far from easy, but we have managed to do so. This makes us very happy and we are really proud to have the team we now have.

### **SKILLS AND CHARACTER**

These are the two things that a UTS service technician should definitely possess. Their work requires the ability to work with state-of-the-art technology and the wherewithal to adapt themselves to the areas where they will be active, one of which is

agriculture. In that case, you should not mind the occasional unpleasant smell or the fact that some people will not mince their words. This is no problem for Klaus Eder, one of our service technicians.

We would like to introduce him to you as the personification of our entire service team. Why? Because he is one of our direct customer contacts. He represents and embodies UTS locally. For those of you who have met Klaus Eder, there is not a great deal that we can tell you that you don't already know. You know that he is a really nice guy, who also knows pretty much everything about biogas plants and agriculture.

To put it briefly: somebody who comes in handy. Someone you can rely on.

### **BACK TO UTS**

After having worked for our sister company UTS Biogastechnik as a fitter and installation manager for a long time, Klaus Eder thought it was

time for a change. But after working for some other companies, he decided to come back to us and we are really pleased about that because his friendly, collegial nature, his willingness to help and his versatile skills, which qualify him to work on assembly, retrofitting, service, re-powering and commissioning, make him a true asset for us. In addition, we and you, our customer, benefit from his qualifications in electrical installations. In particular, these pay off for the PSM mixer which places higher demands on the electrical aspects of assembly and service.

There you have it. Everyone knows Klaus Eder now.

And you also know a little bit more about what we and our UTS Service field staff represent. We want you to know that you are in good hands with us and that we do our utmost to confirm this every day (365/24/7).





# FASTER, MORE ATTRACTIVE, MORE COMFORTABLE AND FULLY EQUIPPED

NEW UTS SERVICE VEHICLES

**Our two service engineers Klaus Eder and Mike Mothes were delighted to receive their new UTS service vehicles.**

They now have enough room for all the tools, parts and materials, as well as the testing equipment they need for their daily work. As plants and requirements become ever more complex due to new technologies and regulations, they have to carry a lot of equipment in their vans.

## **GOOD CONDITIONS, GOOD SERVICE**

Besides the space offered by the new vehicles, comfort and speed were also important. After all, you don't want to have a long wait if you urgently need our help.

Both vehicles therefore have powerful and reliable engines so that they can fly that little bit faster on the motorway if there is an emergency.

And with a cockpit which offers extremely comfortable seating, our service engineers are able to arrive at your site calm and relaxed. ■



# TIP

Would you like to experience this for yourself? Then just call our UTS Service Department on

+49 8082 / 948400





# UTS AND OCCUPATIONAL HEALTH AND SAFETY

SAFETY FIRST, FIRST, FIRST

**Safety is a subject that should not be treated lightly, especially when it concerns working at biogas plants. We don't want to scare people off, but you simply have to be aware of the many potential hazards.**

Biogas is flammable, explosive in certain mixtures, and also hazardous to health and the environment. This is because it is composed of methane, carbon dioxide, nitrogen, hydrogen sulphide and other trace gases. At UTS, we are very much aware of the potential dangers of biogas plants. After all, we are always near to the hazard areas when building or servicing these plants. That is why occupational health and safety have a high priority with us. And this is not something we're just paying lip service to, it's our daily practice. This is also shown by our extremely low accident rate over a very long period of time.

## SAFETY AS A PERMANENT TASK

At UTS, we think of occupational health and safety as a continuous process. It is always necessary to look again at how risks can be further minimised and, above all, to actively keep employees aware of the importance of safety.

That is why we conduct internal and external safety training courses at regular intervals, to keep them alert. This includes training courses on safety for production sites, on the German Technical Regulations for Hazardous Substances TRGS 529 (especially for our service staff), and various other safety-related training courses. By outsourcing safety inspections to external companies, we ensure that we, at UTS, are always up to date on the subject of occupational and general safety. In addition, we are continuously advi-

sed by our company doctor and by the BAD Gesundheitsvorsorge und Sicherheitstechnik GmbH company, who are experts on occupational health and safety. So you can rely on all UTS employees who work on your biogas plant being in tip-top shape where safety is concerned.

## SAFETY EQUIPMENT

Of course, we not only have all the necessary knowledge, but also the appropriate equipment. For instance, we always wear air-supplied respirators when working in areas where gas may be present. Always, even if we only have to be inside briefly.

Our service staff carry all the tools and protective equipment they need for servicing a biogas plant in their vehicles and they actively use them. As the title of this article says: safety first, first, first. ■



# NRScompact

SEPARATING LIVE AND IN COLOUR







**The latest amended version of the German Fertiliser Ordinance (DüV) makes excess slurry and phosphate a real challenge.**

**You might also be wondering: what can I do with my excess slurry and phosphate? How can I easily and efficiently reduce and use them?**

At UTS, we have developed a solution that is as practical as it is practice-focussed. It's called NRScompact. We launched this new UTS slurry processing system in early 2019.

Because we already featured a detailed presentation of this system in the previous issue of our magazine, we will now just stick to its key benefits:

NRScompact enables you to separate slurry into a solid and a liquid, strongly nutrient-reduced phase in accordance with the requirements of the amended DüV. This significantly reduces the surface area required for spreading the separated slurry. In addition, the high separation rates allow easy processing of the liquid phase, e.g. by NH<sub>3</sub> stripping or UF/RO. The solid phase (dry substance > 25%) is particularly rich in nutrients and is ideally suited as an energy source in biogas plants or as a natural fertiliser in areas where little farm manure is produced. With an hourly throughput rate of up to 4 m<sup>3</sup> of raw slurry (3-8% dry matter), this system is suitable for use, for example, for stables of up to 20,000 fattening pigs.

**Real advantages, high demand**

Interest has been high since we put our system onto the market early this year. We have already presented our slurry processing system to several interested customers and shown that the solution lives up to

its promises. If you would also like to experience our NRScompact system in action and see for yourself how it works, then please contact us to make an appointment. Our experts from sales and engineering will be on location to explain the system in detail to you.

Just email us, or even better, call us to plan an appointment. ■





## INTERNAL EXPERTISE

WE TRANSFORM WASTE INTO RENEWABLE ENERGY, CLEAN WATER, HIGH-QUALITY FERTILIZER, AND RECYCLABLES

**Anaergia maximizes resource recovery from virtually any waste stream, transforming waste into renewable energy, clean water, high-quality fertilizer, and recyclables. Anaergia provides complete, integrated solutions for municipal solid waste management, resource recovery in wastewater sector, and large scale farming & food production waste management.**

Our broad experience creates unique synergies which tie together resource recovery in the solid waste, municipal wastewater, and agri-food sectors.

Anaergia has the internal expertise in equipment design, process engineering, equipment, manufacturing, project integration, project financing, and project execution to efficiently deliver projects globally.

### RECOVER RESOURCES FROM WASTEWATER

Anaergia provides solutions to increase the efficiency of municipal and industrial wastewater treatment facilities, transforming them into assets that are net producers of clean electricity, clean water, and fertilizer.

Anaergia's Omnivore™ high solids Anaerobic Digestion technology triples digestion capacity of conventional





digesters in the same footprint and thereby reduces CAPEX as well as OPEX. Furthermore, Omnivore digesters are well suited to co-digest external organic waste streams to generate additional energy and thus revenue. The Fibreplate™ Hybrid MBR technology, manufactured by our subsidiary Fibracast, makes reuse of wastewater efficient and affordable.

Anaergia's integrated solutions use proprietary technologies to dewater, dry, and pelletize sludge, reducing biosolids volumes and increasing diversion from landfills. The end product is a high quality, marketable fertilizer product that is not only sustainable, but can generate revenue.

**SOLID WASTE MANAGEMENT  
– MAXIMIZE RECYCLING AND  
DIVERSION**

Anaergia delivers innovative solutions that are setting new benchmarks for waste diversion and generation of renewable energy from waste. Our approach maximizes the recycling of plastics, paper and metals, and continues the process by converting biodegradable material into energy and fertilizer. The remaining non-degradable and non-recyclable waste can be transformed into a sustainable fuel for coal-fired power plants or cement kilns.

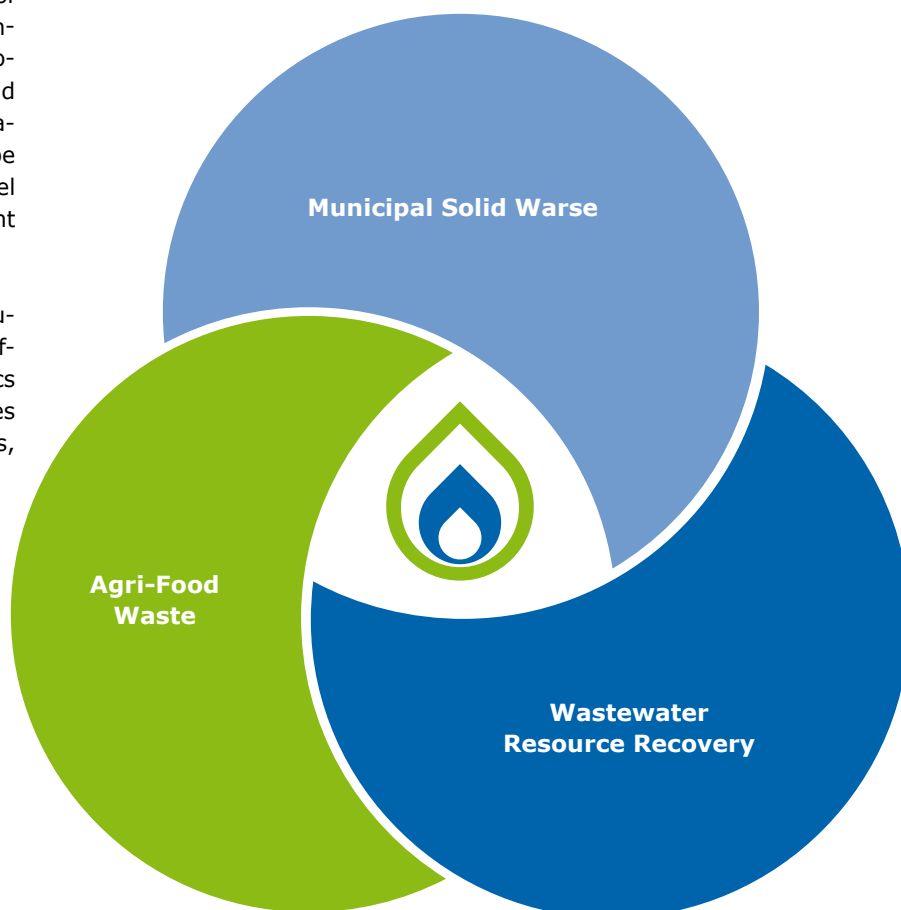
Anaergia's propriety Organics Extrusion Press (OREX) offers a highly efficient approach to extract organics from a wide range of waste sources regardless of contamination levels,

while the CleanREX removes the majority of physical contaminants from organic feedstock, resulting in improved digester performance and production of clean digestate. Once it is polished, the organic fraction can be fed directly to Anaergia's industry leading anaerobic digesters to produce renewable gas, vehicle fuel or electricity.

**SUSTAINABLE AGRICULTURAL  
AND FOOD WASTE MANAGEMENT**

Anaergia provides long-term, leading-edge solutions to large agriculture operations and commercial food producers for organic waste management and regulatory compliance. Anaergia's portfolio of technologies, including Triton™, Helios™, AMR, and FibrePlate™ produce energy, heat, fuel, fertilizer, and clean water, all of which can be supplied back to clients or other markets under predictable, long-term purchase agreements.

The Anaergia group of companies has a long history in the agriculture and food production sectors with hundreds of turn-key anaerobic digestion projects delivered. Industry leaders trust Anaergia's solutions because of their dependability, quality engineered parts, and service support to ensure optimized performance. ■





## MADE BY ANAERGIA!

NORTH AMERICA'S LARGEST ORGANIC WASTE-TO-ENERGY FACILITY

**Carlsbad, California, December 10, 2018 – Anaergia, Inc. is pleased to announce the start of construction at the Rialto Bioenergy Facility (RBF).**

The RBF will help address two pressing waste management issues in Southern California: food waste diversion from landfills and biosolids management. The RBF will convert 700 tons per day of food waste and 300 tons per day of biosolids into renewable natural gas, renewable electricity, and Class A organic fertilizer. When construction is completed in 2020, it will be the largest food waste diversion and energy recovery facility in North America.

The Rialto Bioenergy Facility will provide the Southern California region with a more efficient, local solution for the diversion of 300,000 tons of

organic waste per year. Using Anaergia's advanced anaerobic digestion technology to extract energy from the organic material, this facility will produce the equivalent of 13 megawatts of clean energy per year. The net carbon dioxide emissions reduction will be approximately 220,000 metric tons annually, which is the equivalent of taking 47,500 cars off the road.

The facility is in Rialto, a city about 50 miles east of Los Angeles, near the center of the Agua Mansa Industrial Corridor, an area zoned for heavy industry.

Anaergia is building the RBF in collaboration with Waste Management, Republic Services, Southern California Edison, Anaheim Public Utility, Southwest Gas Utility, City of Rialto, the Sanitation Bureau of the City of

Los Angeles, and the Sanitation Districts of Los Angeles County, and of Orange County. The RBF is co-funded by the California Energy Commission, U.S. Department of Energy, CalRecycle, State of California and significant private investment.

"We are proud to be working with industry leaders in the solid waste, wastewater, and renewable energy industries to build one of the largest organics recycling facility in the world serving the Southern California region. Our new plant will demonstrate a truly sustainable and replicable way to meet the State's organics diversion and recycling need," said Andrew Benedek, CEO of Anaergia, Inc." ■







**10 MILLIONS +**  
Tons of feedstock  
handled per year



**5 MILLIONS +**  
Tons of GHG reduced per year /  
equivalent to 1 million + cars



**> 1.600**  
Number of  
installations globally



**400 MW**  
Renewable energy  
installed base



**4**  
Facilities on four  
continents



**Anaergia**

An Anaergia Company

## UTS Products GmbH

Oestinghausener Str. 12 · D-59510 Lippetal  
phone: +49 2923 / 610 94 0 · fax: +49 2923 / 610 94 100  
products@uts-biogas.com

[www.uts-products.com](http://www.uts-products.com)

