

IN farmer

UTS REFERENCE PROJECT

Gordemitz

SEPARATION "TO THE POWER OF 3"

MSU-Project

ALMOST EVERYTHING IS POSSIBLE

Cash payment, leasing, hire purchase, credit

FARMERS' BILLION

Investment and Future Programme







Dear Sir or Madam,

I would like to take the opportunity of the publication of our new INfarmer magazine to introduce myself to you. My name is Michael Brinkmann and I am the new Managing Director of UTS Products GmbH. I am happy to be on board and look forward to tackling some new and exciting tasks together with my colleagues at UTS and the Anaergia Group. After completing my mechanical engineering studies, I have been able to gain extensive experience in the agricultural sector in recent years, also internationally, at Westfalia Separator, GEA Farm Technologies and Big Dutchman.

“May you live in interesting times” is an expression from the Far East that came true in a most unique way last year. I now fervently hope that we are up for some less eventful times! Politically, there is also a lot going on in the agricultural sector and we at UTS are preparing ourselves intensively in order to be able to provide you with comprehensive support and advice on all kinds of subjects, including the German “farmers’ billion”. Repowering and enhancing the efficiency of biogas plants are also topics which we will continue to pay much attention to this year.

The Coronavirus has led to an intensified discussion about the dangers of globalization and what we would be better off producing and stocking locally. But this should not be limited to just masks and medication. Medical supplies and care, food production, and energy supply go hand in hand here and that is something that we, as a society, should be aware of.

In this context, biogas is and remains the renewable energy that can be most reliably controlled and produced on demand. In this edition of INfarmer, we are presenting the Gordemitz biomethane plant which has recently gone into operation and which is, in many respects, a flagship for our industry.

Other subjects discussed include subsidy and financing options, our Sludge Screw Dewaterer (SSD), and the advantages of a central pump station. And we will also take a look behind the scenes of our PSM 1200 development. I’m sure you will find a lot to interest you in this magazine. But if you have any comments on the topics discussed here, or if you have ideas for future INfarmer articles, please feel free to contact us.

Finally, I look forward to meeting you in person - as soon as this is possible again - and to continuing our joint success story together with you and our colleagues at UTS.

Best regards,

A handwritten signature in black ink, appearing to read "M. Brinkmann".

Michael Brinkmann
Managing Director of UTS Products GmbH



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LEGAL NOTICE

INfarmer
Issue 04/2021

Publisher:
UTS Products GmbH
Oestinghausener Str. 12
59510 Lippetal
Phone: +49 2923 610 94 0
www.anaergia-technologies.com

Editorial staff:

Donato Cristaldi, UTS Products
Jens Schönlau, sku:l communication

Concept and realization:

Plan B Marketing
Möhnestraße 55
59755 Arnsberg
Phone: +49 2932 899722
www.planb-marketing.de

Photo credits:

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SSD SLUDGE SCREW DEWATERER

WHEN THE NAME SAYS IT ALL!

Sludge Screw Dewaterer may not be term that you want to use very often, however, the underlying technology comes in very handy if you have too much sludge.

This can be municipal or industrial sewage sludge as well as slurry or fermentation products produced in agriculture.

General problem: sludge disposal is a challenge, both logistically and economically. What should you do? Separate that what does not belong together. Reduce weight and volume by separating and separate the solids from the liquids.

SSD 225 AND 400

These are the solutions we offer. The working principle is simple, the technical details behind it are cleverly devised, well designed, robustly con-

structed, proven in practice, and designed for efficiency.

In general, in order to optimize the process a polymer is added to the sludge prior to separating it. The polymer-blended sludge, optionally flocculated by a flocculation reactor, is fed into the Sludge Screw Dewaterer.

The combination of the slowly running internal screw and the counter-pressure device presses the sludge against a screen (non-clog slotted screen basket). The liquid components, the filtrate, are separated and discharged to the filtrate tank. The solids, i.e. the dry sludge cake, are ejected and can be transported to a storage location by conveyor belts.

This "problem material" can be used or sold as fertilizer.



THE ADVANTAGES OF THE SYSTEM?

First of all, there is its very high capacity. The SSD 225 and SSD 400 achieve considerable throughput rates of up to 20m³/h or 325kg of TSS/h or up to 60m³/h or 1160kg of TSS/h (TSS - Total Suspended Solids).

And this in fully automatic continuous operation under economically optimized conditions: energy consumption is low, availability is high thanks to the non-clog slotted screen baskets and integrated spraying device (rinsing without interrupting the separation operation), and the service life is particularly long thanks to high-quality materials (all parts that come into contact with the media are made of stainless steel) and the robust construction.

In addition, flocculant consumption is very low due to dynamic inline mixing, and noise and odor development is minimized.

ANYTHING ELSE?

In many applications, the solids content must first be increased in order to achieve a volume reduction. This is where an SST Sludge Screw Thickener comes into play. For example, if you want to increase the sludge retention time in anaerobic digestion plants in order to increase biogas production, the SST is the optimal solution.

Both systems offer a very high degree of application flexibility. Exchangeable slotted screen segments allow the separation efficiency to be adjusted for different media, whereas the dryness of the output materials and uniform solids output can be adjusted by means of the pneumatic counter-pressure device.

And last but not least: we can deliver your Sludge Screw Dewaterer system completely configured and assembled as a compact turnkey solution. ■





Hubertus Peitz and Thomas Braun

SEPARATION “TO THE POWER OF 3”

MSU-PROJECT AT THE BIOGAS PLANT OPERATOR HUBERTUS PEITZ

UTS is well-known for the high-quality separators it has been producing for several years.

Whether it is a question of high separation rates or the highest possible dry matter content in the solids (e.g. in order to use them as bedding for animal houses), UTS offers long-life separators in various sizes, for a wide range of applications through its FSP-A and FSP-B series. Many of our readers will be familiar with the UTS MSU (Mobile Separation Unit) with its complete pump and control system.

But what if standard products do not meet a customer's requirements and they have their own individual preferences? Well, that's easy: if it is

technically possible and economically justified, we always seek to satisfy our customers' wishes.

This was also the case some three and a half years ago when entrepreneur and farmer Hubertus Peitz, from the beautiful town of Schmallenberg in the Sauerland district of Germany, contacted us. He wanted to offer the separation of liquid manure and fermentation residues as a service to customers throughout North Rhine-Westphalia (NRW).

Since Mr Peitz was already a biogas plant operator and owner of a UTS separator, we did not need to convince him of the quality of the separator itself. The only thing we had to do was to come up with a plan for

a mobile unit and then convince Mr Peitz with our proposal.

LARGE COMBINED SEPARATION TO GO

The special requirement for this plant was that it should be capable of achieving high throughput and high separation rates, as well as producing high-quality bedding material with a high dry matter content of >35% whenever required. So, it should enable the right balance between “mass” and “class”.

The result is definitely worthwhile: A Mobile Separation Platform (MSU-3) consisting of three FSP-B 78/15 combined separators suitable for both bedding operation and regular



TO GO



operation. These separators have enabled Mr Peitz to either separate high amounts of mass and volume per hour up to the maximum pump capacity (approx. 100m³/h) or, if required, to produce very dry bedding material (litter) from cattle slurry with a throughput of approx. 20-30m³/h.

FULLY SELF-SUFFICIENT

Of course, our flexible separators alone were not enough: flexible pump equipment with corresponding control options also had to be installed. Depending on the dry matter content of the slurry or the fermentation residues and the requirements on the dryness of the solids, the special eccentric screw pump is frequency converter-controlled for flow rates of between 20 and 100m³/h.

In addition to the good control possibilities of this pump, one of its advantages is the ability to draw in

materials from deep below (e.g. a slurry cellar). The system runs fully automatically, and so various sensors measure the filling levels, flow rate and pressure and then send the data to a PLC with a touch screen. A dynamically controlled rotary pump conveys the liquid phase through a buffer tank to any destination the customer requires - even over long distances and into high containers.

In addition, the unit features its own enclosed power unit and the necessary conveyor belt technology, e.g. to convey the solids directly onto a trailer. Hoses and its own pressure cleaner are also a standard feature of the MSU-3.

TRY IT YOURSELF!

If you are located in NRW and would like to separate slurry or fermentation residues, you can contact Mr Peitz directly on **+49 170/2025306**.

The platform is driven to the customer's farm on a truck, unloaded autonomously and then remains at the customer's site until the desired amount of slurry has been separated.

Billing is fair and transparent: per m³ of raw slurry. It can also be agreed in advance with Mr Peitz how dry the solids should eventually be. The machine then arrives at the customer's appropriately adjusted.

Mr Peitz is looking forward to your call! ■

HERBERT EDER

WHATEVER HAPPENED TO GOOD SERVICE?



Is good service hard to get in Germany? Not as far as we are concerned.

At Anaergia Technologies, we love our work and our products and equipment. And not only in the good times. That's why we are always there for our customers whenever they need us. No matter whether this concerns a simple question about our products, maintenance that should be carried out soon, or a technical defect that

threatens to shut down the plant. We help wherever and whenever we can.

Our technical service department is also ready for you when it comes to new products or if your plant should be extended or converted as part of a repowering project.

SERVICE DOESN'T JUST FALL FROM THE SKY!

Service is brought about by people.

It takes specialists with skill, commitment and a practical eye and mind.

One such specialist is our Mr Herbert Eder who has learned his trade from the bottom up. As a young metalworker who had just completed his apprenticeship, he started as a fitter at UTS and spent the next seven years setting up our systems in Germany and all over the world. He therefore knows every part and has held every screw in his own hands.



This helps him understand the complexities of how things can be linked together.

Since 2010, he has been using his experience and solution-oriented attitude to help our customers in Bavaria and the rest of Germany. He turns customer requests or problems into proposals for solutions; "can't do" won't do for him! That's something that can't be taught.

STAYING INTERESTED

Herbert Eder is one of many Anaergia Technologies / UTS colleagues who do not like to stand still and so keep developing themselves. In parallel to his daily work, he completed his metalworking master's degree at an early age and trained as an agricultural assistant.

He says, "I want to understand things and learn more about the details.

This helps me to react quickly in practice and to develop good, practical solutions."

And the fact that he is very successful at this is evidenced by the respect he enjoys among customers and colleagues alike. It is certainly due in large part to him that our service center is often referred to as the Customer Happiness Center. Who else can say that about themselves? ■

ALMOST EVERYTHING IS POSSIBLE

CASH PAYMENT, LEASING, HIRE PURCHASE, CREDIT

There is one common goal that underlies almost all investments in farms or biogas plants: reducing operating costs and making the operations as future-proof as possible.

At present, topics such as flexibilization (CHP/gas storage), slurry technology (separators, spreading technology) or energy efficiency (economical mixing equipment) play a major role.

However, considering the general maintenance requirements on farms and the many plant safety and emission protection requirements that operators/farmers have to comply with, it will not come as a surprise that the necessary funds for important investments will not always be directly available.

Financing can be the right solution, especially if the planned investment will help to reduce operating costs in the long term.

INVESTING WISELY

Even if you have saved the financial reserves for such investments, this does not always mean that you actually want to spend them. Tax reasons or the desire for a good cash position are often reasons to decide to finance new equipment. Ideally, such investments are cleverly chosen so that the money saved by using the new technology, e.g. a PSM mixer, covers the financing costs.

This means that the new purchase virtually pays for itself and the effective monthly costs remain the same or even improve (see examples).

THE RIGHT CONTACT FOR FINANCING QUESTIONS

Whenever there are plans for large projects, most people contact their regular bank first. But for purchases between €25,000 and €250,000, many farmers and biogas plant operators are reluctant to “tap a new barrel” at their bank.

So for exactly these cases, UTS, in collaboration with our partner *Schacht Leasing*, offers various straightforward financing possibilities. *Schacht Leasing* has been active as a financing partner in the biogas and agricultural markets for twelve years and has already helped numerous customers find the right financing to suit their needs.

Schacht Leasing is not only familiar with the products of our industry, but this financing partner also speaks the language of our customers:

“Having grown up on a farm, I naturally have a great affinity for agriculture. My partners and I help you ensure that you can make your investments in biogas and agricultural equipment quickly and cost-effectively,” explains Bodo Schacht.

Leasing, hire purchase or a traditional credit – in principle everything is possible, whatever our customers or their tax advisors prefer. We can quickly prepare a financing proposal free of any obligation. If you are interested, binding offers and financing details are discussed discreetly and directly between our customer and *Schacht Leasing*.

THE BEST? WE'VE KEPT THAT UNTIL THE END OF COURSE

If you are interested in financing one or more PSM mixers, and at the same time wish to take advantage of the federal government's efficiency subsidy (module 295; for German customers only) with up to 40%

investment subsidy via BAFA, hire purchase is also an option. In this case, unlike with leasing, you become the owner of the asset and you capitalize it on your balance sheet from the beginning.

In principle, *Schacht Leasing* finances our separators (stationary and mobile) as well as our PSM mixer equipment. Please have a look at the calculation examples on the right. In addition to the economic advantages, the immediate technical advantages are also quite considerable. For example, better mixing of the fermenter with the PSM mixer (example 1) or improved operational slurry and nutrient management by separating the slurry or fermentation residues (example 2) using our separator. Interested? Our sales colleagues would be happy to give you some more detailed advice!

You can find more information about *Schacht Leasing* on www.schacht-leasing.de ■



Object to be invested in

Investment costs (hardware only)*
 Annual electricity savings**
 Monthly electricity savings**
 Monthly hire purchase cost (60 months)

2 PSM mixers with DMC

approx. €32,000
 approx. €15,700
 approx. €1,308
 approx. €592

Additional funds freed up every month**approx. €716**

* plus one-off costs for installation and electrical cabling, which are generally not financed by hire purchase
 ** Comparison of 2 PSMs to 2 high-speed TMRs with approx. 18kW and 20 min. of mixing time / hour

**CALCULATION EXAMPLE 1: PSM MIXER****Object to be invested in**

Investment costs (hardware only)*
 Annual savings on bedding for 200 cows**
 Monthly savings on bedding**
 Monthly separator operating & maintenance costs
 Monthly lease (60 months)

Bedding Separator

approx. €32,000
 approx. €13,500
 approx. €1,125
 approx. €100
 approx. €550

Additional funds freed up every month**ca. €475**

* plus one-off costs for installation, pipeline construction and pumping technology
 ** at approx. 4.5m³/y per animal and costs of €15/m³ for conventional bedding

**CALCULATION EXAMPLE 2: BEDDING SEPARATOR**

Schacht Leasing Phone 04531 67 01 23
 Meddelskamp 32 B Fax 04531 89 72 344
 D-23843 Bad Oldesloe Mobile 01522 243 6000

bodo.schacht@schacht-leasing.de
www.schacht-leasing.de

Bodo Schacht





GORDEMITZ BIOMETHANE PLANT COOPERATION PROJECT

WIN-WIN-WIN



The story behind this project is so unusual that it would make an exciting Hollywood screenplay.

It's about rise and fall, a long spell of hardship, adversaries who become allies, fighting for what is good and meaningful, and ... a happy ending. These are not exactly the words you would normally expect when describing a biomethane plant project!

LET'S START AT THE BEGINNING

One step at a time.

Let's start in 2010. Back then, when EEG 2009, the German Federal Renewable Energy Sources Act, was in force, the biogas world was in full bloom and building biogas plants was still quite attractive. However, the introduction of EEG 2012 brought an end to this booming growth. Whereas some 4,400 new biogas plants were built from 2008 to 2012, this fell to just over 900 in the comparable period from 2012 to 2016.

It was in this first period, between 2010 and 2013, that the plant near Gordemitz (10km north-east of Leipzig) was designed, as one of the last of its size. At the time, the project was commissioned by the Münster based company agri.capital, which was then one of the largest biogas plant operators in the market, while UTS Biogastechnik, as the company was known at the time, was awarded the job of designing and constructing the plant.

PAINFUL

Initially everything went according to plan, the ground-breaking ceremony was held in 2013, and it was planned that the project would be completed and the plant connected to the electricity grid and the natural gas grid in 2015. The project was running smoothly and the building activities

were progressing nicely. But then, in 2014, with the construction activities in full swing, there was some terrible news: agri.capital, the client and investor, had gone bankrupt! The work was stopped immediately and the unfinished project became part of the insolvent estate. This was a very unpleasant situation for everyone involved, including the neighbors who could do nothing but watch this promising project gradually fall into decline.

The chances of a turnaround and a fresh start were slim. But then suddenly, in 2018, two experienced biogas entrepreneurs from the German Westphalia district discovered the project for themselves, bought it, and energetically started to plan its reactivation. Their initial plan was to extend the existing permits, revise the concept, adapt the technology, and continue building the project on the basis of the existing built structure. However, there was yet another unexpected turn of events shortly before the project was to be restarted together with UTS. The Westphalian investors decided to sell the project again.

And, as a result, in late 2019, the plant became the property of BALANCE Erneuerbare Energien GmbH.

BALANCE ERNEUERBARE ENERGIEN GMBH?

Now we just need to take a short detour in order to give you a better view of the big picture. BALANCE is a subsidiary of the VNG group of companies, which is active throughout Europe, and has 20 subsidiaries in the energy market with a focus on the gas industry. Based on its group strategy "VNG 2030+", VNG has been investing in the energy transition and the future. The group's website says: "Consequently, we are also focusing on

the world of natural gas in the far future: for example, whilst what are known as green gases currently account for less than one percent of total natural gas consumption today, this ratio will be reversed within a few decades – with considerable effects on our business and the entire energy sector."

So now back to the project: from an abandoned ruin to a sign of hope in no time!

A MINOR HURDLE

As we mentioned earlier, the original project was planned by UTS Biogastechnik in 2010. The company was a direct competitor of Schmack Biogas GmbH, a subsidiary of the Viessmann Group, which, like UTS, built biogas plants to industrial standards. So actually, the companies had been competing for the same customers for many years.

Now fate can be so cruel: when BALANCE restarted the project, a new consortium suddenly emerged. After a total of nine years in which UTS had worked on this project with varying levels of intensity, the new owner BALANCE brought in the company now known as Schmack Biogas Service as an established partner. Would it be everyone with each other, or against each other, that was the question. However, after a thorough introduction of all the parties involved, it soon became clear that as far as the customer BALANCE was concerned, and given the tight time schedule and budget, the only option would be for UTS and Schmack to work together.

Schmack was to construct and coordinate the entire plant as the general contractor and UTS would be responsible for fitting out and constructing the raw biogas line,

from the input of solids to the gas output at the tank. But would this actually work out?

Well it did and it has actually led to a WIN-WIN-WIN situation for all the stakeholders.

Tobias Anzer, a sales engineer with Schmack said: "Naturally, I was a bit sceptical at first. We planned a first appointment where our 'territories' were staked out. Both sides had to compromise and work together. But this actually resulted in a good solution for the customer, which we are currently implementing. What I hear from our project team is that they see the collaboration as very good, professional and based on trust. We will definitely continue this in future projects."

Donato Cristaldi, Head of Sales & Service at UTS, is also enthusiastic about the cooperation with Schmack: "Our team, consisting of Christian Friedl, Thomas Braun and myself, and our colleagues from Schmack, from Mr Anzer to the management including Mr Götz, all got along together right from the beginning. It did not take long for us to realise that the Schmack team were also professionals who, despite their great belief in their own technologies, were open to the UTS technology approach that had already been planned.

I think both parties were pleasantly surprised by the honest and open interaction and by what the other party could contribute to the project. It quickly became clear to everyone that the project could be brought about more safely and quickly by working together than without the other party."

So what started out as a forced marriage has evolved into a true biogas romance.



THE PROJECT

In short, the goal is to build a bio-methane plant which will enable BALANCE GmbH to feed approx. 700Nm³/h of climate-neutral biogas of natural gas quality into the natural gas grid per hour. The “green gas” is stored in the grid, so to speak, making it available for use all over Germany.

To make this possible, a gas treatment plant from the Schwelm company brings the raw biogas from the biogas plant to a methane content of approx. 97%. The biomethane can then be taken from the grid and used wherever this makes sense. For example, as a climate-neutral fuel for public transport (natural gas-fuelled buses), as well as for “green” heat and power generation in CHP plants of hospitals, swimming pools, industrial companies or in district heating networks.

This makes the plant a further component of the energy transition through green gas for BALANCE and an example of how the future can be shaped to achieve a WIN-WIN-WIN situation from both a climate and an environmental point of view.

THE PLANT

Well it’s large, as the performance data suggests, but compactly built. But let’s start from the beginning:

at the substrate which is fermented to biogas in the plant. The substrate consists of renewable raw materials such as corn and grass silage, as well as approx. 10-15% of dry chicken manure from regional farms. Some 45,000-50,000 metric tons of input materials are processed in the plant under full load per year, resulting in approx. 700Nm³ of bio-methane being produced or fed into the grid per hour, enough to supply approx. 3,000 to 4,000 households with energy.

5 DIGESTERS

Overall, the plant consists of two pre-digesters and three main digesters. In 2014, UTS Biogastechnik provided the two pre-digesters with concrete ceilings in order to ensure intensive mixing, proper desulphurisation, a stable gas pressure and low heat losses, while excluding any weather influences.

Two Havelberger solids feed-in systems with capacities of 120m³ and 150m³ and the conveyor technology that is typical of UTS plants feed two pre-digesters and two of three main digesters with solid substrate.

Besides being very robust, the Havelberger scraper chain conveyors with milling rollers and the installed conveyor technology offer the advantage that they can convey fibrous material into the tanks without

any obstructions and with low energy consumption. If required, liquid manure can also be supplied and introduced via a preliminary pit.

14 PSM MIXERS

The contents of the five digesters are mixed by a total of 14 state-of-the-art UTS PSM mixers with gearless direct drive and intelligent DMC control. These mixers not only provide the necessary thrust and mixing, but thanks to their power consumption of approx. 7 - 9kW, they are also one of the most energy-efficient mixing systems on the market.

FURTHER HIGHLIGHTS

A total of 17 Service Boxes Pro enable easy and safe access to the mixing equipment at any time and feature integrated and frost-protected overpressure/underpressure safety devices, as well as “clean” gas tapping points far above the substrate level. Pump structures with progressive cavity pumps and a UTS ZPS (central pumping station) and numerous pumping options in all directions ensure sufficient operational flexibility.

Two UTS FSP-B 78/15 separators ensure high solids separation of already fermented material and enable the dry matter content to be regulated by returning the filtrate to the digesters or, optionally, to the fermentation product storage.

The entire set of equipment is designed to achieve the efficient, trouble-free, economical, and above all safe operation of the plant throughout the fermentation process.

ALL'S WELL THAT ENDS WELL

The Gordemitz plant became operational by late 2020, and it will start to actively contribute to environmental and climate protection by end of January 2021. This has been a challenging project, which, given its rather uncommon start and project set-up, initially required a lot of good will.

At the start of this article, we referred to a happy ending. UTS, Schmack, BALANCE, and Mr. Kellermann from greenValue managed to combine their competences and capacities to optimum effect. This made it possible that the project was completed "in time and according to budget" and at a consistently high technical level. Donato Cristaldi, Head of Sales & Service at UTS said: "Achieving a goal sometimes takes stamina. I am very happy with how successful the project has been and how well we have been working together with Schmack. The Gordemitz plant means a lot for many colleagues who already worked for UTS when it was first planned, and we are proud and happy to see this plant finally go into operation, even if it is six years later than planned."

The plant will soon be connected to the mains in Gordemitz and it is a showcase project in many respects. Not only that, but in the end, there will only be winners: BALANCE as an operator, UTS & Schmack as contractor, local farmers, gas consumers and, last but not least, the climate. **WIN-WIN-WIN.**

All that remains is for the heroes of the film to ride off into the sunset together... ■





WHAT IS THIS “FARMERS’ BILLION”?

INVESTMENT AND FUTURE PROGRAM IN GERMANY

We reported on the new German Fertilizer Ordinance in the previous issue of INfarmer under the keyword “Separation”.

This ordinance took effect on 1 February 2020 and has been posing considerable challenges for many agricultural enterprises. In most cases, complying with these new regulations is not just a matter of good will and minor changes to farm procedures. It requires extensive investments in new slurry storage capacity, new application technology or separation systems. So far, farmers have had to pay for those costs themselves.

PROTESTING HAS HAD EFFECT

Since gentle coaxing did not help, many farmers decided to take to the roads with their tractors to demand and receive support to help them implement the Fertilizer Ordinance. Their protest was partly successful and at the end of January, the fe-

deral government issued its promise of the “farmers’ billion”. A resolution document published by the coalition committee stated: “In order to support farmers in the upcoming transformation process, we will make a total of EUR 1 billion available for agri-environmental programs and investments within four years.” In this context, CSU leader Markus Söder coined the term “Bauernmilliarde” or “farmers’ billion” in English and promised, “This is a clear sign of appreciation and support in difficult times. The money is intended to prevent hardship when implementing the Fertilizer Ordinance and should help farmers to purchase new slurry plants, for example.”

The term “farmers’ billion” is certainly something not everyone agrees with, and the form of the subsidy has also met with increasing criticism from many farmers (and customers). They allege that it is a) not open to everyone and b) it does not solve the key issue, since the main complaint that

many farmers have been making for years has been that they are not sufficiently rewarded for their products.

GET IT WHILE IT LASTS - THE FIRST MONEY HAS ALREADY GONE

A total of EUR 207 million in investment subsidies is planned for 2021. In total, the farmers’ billion consists of the following pots and is to be distributed between 2021 and 2024:

- » EUR 816 million for investment measures
- » EUR 140 million for agri-environmental measures
- » EUR 24 million to promote innovation
- » EUR 20 million for digitization

A further EUR 35 million is earmarked for agri-environmental measures with a focus on insect protection and a further EUR 8 million for digitization measures.

WHO IS ENTITLED TO SUBSIDIES?

German agricultural companies and agricultural service providers such as contractors and machinery rings are entitled to submit applications for subsidies. Proposed subsidy rates are:

- » agricultural enterprises 40%
- » agricultural service providers 20%

In general, investment amounts of EUR 10,000 or more are eligible for subsidies. The initial application is made online on the website of Rentenbank, after which it is handled by the applicant's principal bank. The applicant will have to cover 60 or 80% of the investment sum by means of regular bank credit. A pure "cash subsidy" is not possible.

Three comparative quotations have to be submitted for investments of less than EUR 100,000 and they must be kept available in case of an audit. Applicants who fail to be able to present these three quotations, or who fail to opt for the lowest-cost offer, have to justify why they did so (for example, lower operating costs). Again, this justification must be kept in the company's records. It does not have to be submitted as part of the application.

WHAT IS SUBSIDIZED?

- » the construction of covered slurry stores with capacity expansion enabling storage to be extended by two months
- » the procurement of equipment for high-precision application of fertilizers and plant protection products and for mechanical weed control
- » the procurement of mobile or stationary equipment for slurry separation



So far, so good. Applying for the subsidies has been possible since Monday 11 January 2021 at 12 noon. However, so many applications came in on that first day that Rentenbank's website was temporarily closed for any further investment applications after a couple of hours.

TO BE CONTINUED IN MARCH 2021

If you are interested, please visit Rentenbank's website on a regular basis. It features a wealth of carefully prepared information about the application process and the general procedure.

According to the information available at the time of writing this article, it looks as though another major tranche from the "investments" pot will be made available or brought forward for applications in **early March 2021**. And then again it will be a case of the early bird catches the

worm, or "first come, first served".

OUR SUGGESTION: SEPARATION

Although there is some time pressure, it is never a good idea to just go ahead and buy something without careful thought. It is a better idea to invest in products and technologies that you will need in any case and, above all, that will be value for money throughout their life cycle. This means that high quality, low cost of wear, and low operating costs should be the main criteria, and are far more important than simply the lowest price.

From this point of view, and admittedly also for our benefit, we advise you to invest in your own separator. Optimize the separation of your nutrient-rich solids by optimizing your slurry management and improve your nutrient balance. From an energy point of view, one ton of separated cattle manure repla-

ces almost half a ton of corn and is therefore most welcome as a fuel for biogas plants. Another advantage of separating is that it enables easier slurry application – which is also Fertilizer Ordinance-compliant – using the required methods (drag hose, drag shoe or channel method). Un-separated raw slurry clogs up drag hoses considerably more frequently. In addition, the mandatory incorporation of un-separated slurry into the soil requires greater effort and incurs higher costs because it penetrates the soil less effectively. Separation results in about 30-40% of the phosphorus and about 20-25% of the nitrogen entering the press cake. The immediately available ammonium nitrogen remains predominantly in the liquid phase, on the farm.

We would be happy to advise you on the subjects of the farmers' billion and separation, and show you which of our mobile or stationary separators make sense for your company. ■

ZPS 4000 E CENTRAL PUMP STATION

CUTTING EDGE





The efficiency and yield of biogas plants can be optimized in many ways.

Transporting and moving the fermentation substrates in and between tanks plays a key role in this. It sounds simple:

The substrate is transferred from the collection tank to the digester where biogas then occurs naturally, and the process ends by filling the fermentation residue store. This is correct in theory, but in practice it isn't always that straightforward. Since substrates are natural products from the field or from animal houses they have their natural variations. And unfortunately, they do not behave in accordance with specific rules or DIN requirements.

FROM PRACTICE, FOR THE INDUSTRY

When developing the ZPS 4000 E, our engineers rigorously took stock of the challenges that a central pump station would face in practice. And they considered what else would be required of the pump station to make the overall process proceed as efficiently as possible.

As they found that the pump, the heart of the central pump station, was the key feature, our engineers decided to go for a Pressure Chopper Mixing Pump (DRP 4000) construction, which, as the name suggests,

does more than just pump.

One of its main advantages is that this pump consistently and vigorously tears and cuts the substrates (including challenging constituents such as lumps of manure, fibres, small pieces of wood and straw) before pumping. A WIDIA-armoured auger pulls the substrate over a cutting edge and into the pump where the substrate is accelerated by a steel impeller running at a speed of 1500rpm and conveyed at high pressure. And that's not all. The substrate is not only torn, cut and conveyed, but is mixed as well. This gives the substrate a better, more homogeneous consistency, creating the basis for good fermentation and a stable overall process. The more regular the pump passage, the better the homogeneity and the gas production potential will be. And the easier it will be to process the substrate after the fermentation process. That means lighter pumping, better separation and, consequently, easier and more even slurry application using drag shoe and hose distribution methods.

HOW ABOUT FOREIGN OBJECTS?

In practice, foreign objects are a pump's Achilles' heel and often spell the death of a conventional pump. To protect the DRP 4000 from foreign objects, it has been equipped with a welded steel impeller with a

steel intake cage and cast iron pump body. It has a special geometry and is reinforced with extremely resistant materials in those areas that are subjected to the highest loads. This means that, in practice, it is unharmed by any but the very hardest foreign objects.

When pumping animal manure or substrates with solid manure fractions or from recycling plants, foreign objects encountered can range from animal house fragments to belts, horseshoes, hoof blocks, parts of harvesting equipment, sandbags, tyres, foils, cutlery, plastic parts, glass, etc. Where a positive displacement pump would be damaged by such foreign objects, the DRP 4000 will only jam. Its good accessibility enables foreign objects to be removed quickly, after which the pump and, as a result, the entire central pump station will run smoothly again. Small particles foreign to the substrate, such as sand, stones, gravel and glass, are carried along easily and safely because of the high flow speed.

All in all, thanks to its cleverly devised, robust design, the DRP offers a significantly longer service life and significantly less wear than a positive displacement pump. Furthermore, worn parts can be replaced quite easily and, in most cases, by the operators themselves. This pays off and the investment costs can be recouped relatively fast.



HIGH CONVEYING SPEED

Once the central pump station has been installed, all substrate streams in the biogas plant will pass through this station. Installed centrally in a pump building, its four feed lines can serve up to four tanks. Pneumatic valves enable easy selection or adjusting of the pumping paths.

Besides substrate optimization and its robustness, another key advantage of the system is its enormous capacity. The pumping capacity of up to 350m³/h enables large substrate volumes to be circulated quickly and easily within the system. And its high delivery capacity supports the quick filling of tankers and thus quick and easy fermentation substrate application.

By comparison, the delivery capacity of conventional positive displacement, worm, rotary piston and piston pumps does not exceed 40-100m³/h as a rule.

IMPROVED BIOLOGICAL CONDITIONS

The primary purpose of the system is to consistently optimize and simplify the fermentation process. Fast circulation of large quantities provides flexible options for controlling the fermentation process in a targeted manner and for reacting to several different situations.

The central pump station enables recirculation according to the first in, first out principle in order to lower the load in the digester and improve the stability of the secondary digester. And, thanks to its high production capacity, there will be no temporary bottlenecks when balancing volumes. This is because the same quantity that the digester (with higher dry matter content) pumps into the secondary digester can be pumped back (with lower dry matter content) virtually simultaneously.

Another option for stabilizing the biological conditions in the digester without reducing the dwell time is to rapidly circulate large volumes from the bottom to the top. This is particularly advantageous if the substrate tends to segregate. In this case, the digester acts as a separator in which the more liquid substrate settles at the bottom and the fibre-rich material accumulates at the top. The more markedly the substrate segregates, the more difficult it will be to get it moving and pump it to the secondary digester later. To counteract this, the central pump station pumps large quantities of the more liquid substrate into the digester at the top in a short time, where it is mixed in again by the mixers. An additional effect is temperature equalization between the cooler substrate at the bottom and the warmer substrate at the top.

LOW MAINTENANCE COSTS THROUGHOUT

The central pump station is designed and constructed such that all components that are subjected to heavy loads are constructed robustly and all delicate components, such as the drive shaft and motor, are optimally protected and therefore virtually maintenance-free. For example, the shaft features multiple bearings, runs in an oil bath and is protected against dry running by a mechanical shaft seal with an oil reservoir. The motor is positioned outside the robust stainless steel pump housing, so as to prevent any contact with the substrate. Overall, the design of the central pump station offers very good accessibility, simplifying maintenance work on all components and making it easier to remove foreign objects in practice.

OPTIONS THAT PAY FOR THEMSELVES

Several options are available to add to the standard configuration. For instance, additional frequency converters enable variable adjustment of the volume conveyed, from 40 to 350m³/h, to match the requirements of mixing systems, separators, external heating systems, sanitation and recirculation. Another advantage: power consumption is minimized and energy efficiency is increased.

If substrates with high dry substance content or gas-laden substrates are mainly used, the central pump station can be additionally fitted with automatic pump control and a venting device. The pump capacity automatically adapts to the medium and the gas is discharged in a controlled manner. ■



THE ZPS 4000 E AT A GLANCE

- Dry installed central pump station for multifunctional conveying tasks
- Four pipelines for four system tanks
- Robust and powerful DRP 4000 Pressure Chopper Mixing Pump
- Fast circulation of large volumes of substrate
- Optimization of substrate and biology
- Long service life, low wear
- Delivery of up to 350m³/h
- Power rating from 11 to 30kW



PSM 1200 MIXER

FULL SPEED AHEAD

Yes, you've read it correctly: PSM 1200 - not PSM 940 or PSM 1500. Our designers are developing a new mixer blade. Why?

Well, first and foremost, because we're always trying to make good things even better. And adding a medium-sized solution will fill a gap in our range.

BACKGROUND

This is actually all about fluid mechanics, but that's a subject we don't want to go into here.

Basically, you can compare it to the development of a ship or aircraft propeller. What is the ideal design for a propeller or mixer blade that will generate the perfect feed rate?

A fully loaded container ship requires an enormous propeller, whereas a light aircraft only needs a small prop. It's all about size, hydraulic design, thrust and circulation capacity. In short, the perfect mixer blade with the best drive available.

But don't the PSM 940 and PSM 1500 already offer that? Well, yes and no.

The market is changing and we're seeing more and more high-performance biogas plants with a high organic load rate. Although the operation and efficiency of our systems are unrivalled, an intermediate solution is needed for a special combination of system and substrate: a mixer blade with a diameter of 1200mm.

DRY MATTER CONTENT OF 8 TO 12%

This dry matter content is quite challenging and calls for some power

mixing. Our RF1500 (mixer blade 1500) is definitely not cut out for that. It was designed as a flow-maker for systems with low-viscosity substrates. It does not achieve the desired mixing performance in high-viscosity media.

And how about the RF940? This blade can handle dry matter content of up to 12%. However, if it had a larger blade it would be able to utilize the reserve power of our gearless permanent magnet synchronous motor (PSM) even more efficiently. Combined with our intelligent DMC control system, that would give us further possibilities in terms of mixing performance and efficiency.

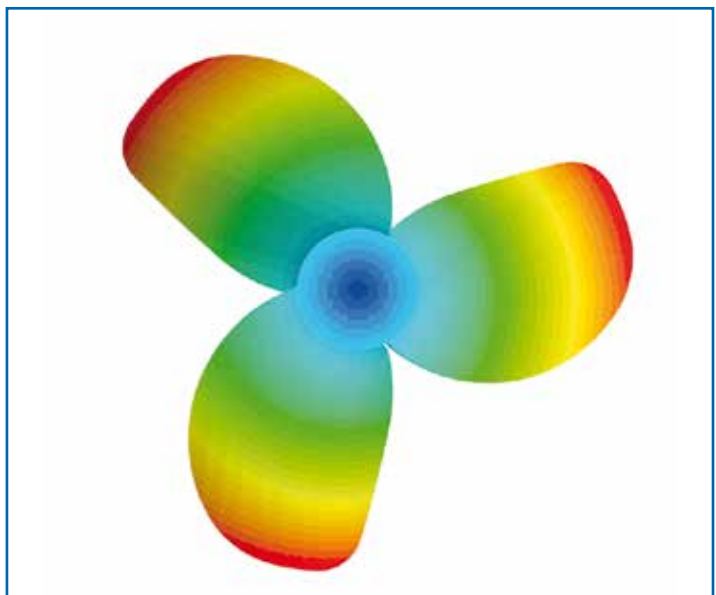
With a theoretical power consumption of 11.2kW, the RF1200 can generate torque of up to 800Nm at the mixer shaft at speeds of around 120rpm. These are impressive values and figures, but unfortunately the RF940 cannot fully achieve them in practice.

Consequently, the system with the RF940 generally doesn't manage to draw significantly more than 9kW of motor power, although this would be an advantage under particularly challenging conditions, especially with pseudoplastic substrate behaviour.

TOO SMALL? TOO BIG?

So we needed a solution which would fill the gap between the RF940 and the RF1500. We took measurements in plants, studied real-life conditions and visited plants that worked with dry matter content of between 8 and 12% and eventually we decided to develop a new mixer blade. We ran elaborate CFD simulations to simulate the mixing behaviour of the blade and fine-tuned it on the basis on the results of these simulations.

This led to the development of the RF1200, whose shape is similar to that of the existing models, but which, upon closer scrutiny, can be seen to have its very own wing geometry and wing characteristics.





COMING SOON

PSM 1200 MIXER

IN THEORY?

In theory, yes. That's how engineering works. Doing development work inside an actual digester is simply not possible. But since we are practical people at heart, we have been observing, verifying and testing on and in plants.

This has resulted in a prototype that matches our ideas and calculations and we are now field testing it with some customers who use the substrates in question. Of course, a lot of measuring is involved and so far this has confirmed our calculations and simulations.

The power that the mid-size blade draws in the field tests using substrates with dry matter content of between 8 and 12% is noticeably higher than the 8kW drawn by the RF940. This means that we get more

power into the digester when required and, generally speaking, we can run at lower speeds than is the case with the RF940. Which of our three mixer blades is best suited to each specific application is something that will have to be considered on a case by case basis.

TRIALS UNTIL MID-2021

Have we aroused your enthusiasm? Well, don't get your hopes up too high yet.

We won't be marketing the new RF1200 mixer blade until we have carried out all the tests under all applicable conditions. We insist on that.

We will need time to further optimize the product after receiving feedback and test data and then bring it to market maturity. We are quite

sure that we will get it to that stage, which means that you can count on our PSM 1200 appearing in the future.

WHO MIGHT CONSIDER USING THE PSM 1200?

First of all, it depends on your biogas plant and the substrates used. If your digester processes substrates with dry matter content of over 8% and pseudoplastic behaviour, it will probably perform very well with a PSM 1200.

Of course, combining both wing sizes might also be an ideal solution. This is especially true if you have so far relied on high-speed units with small blades or hydraulic mixers, which are significantly less energy efficient. Any of our three PSM versions can save you up to 50% in energy consumption, and sometimes even



more. That's thousands of euros a year which can definitely be put to better use.

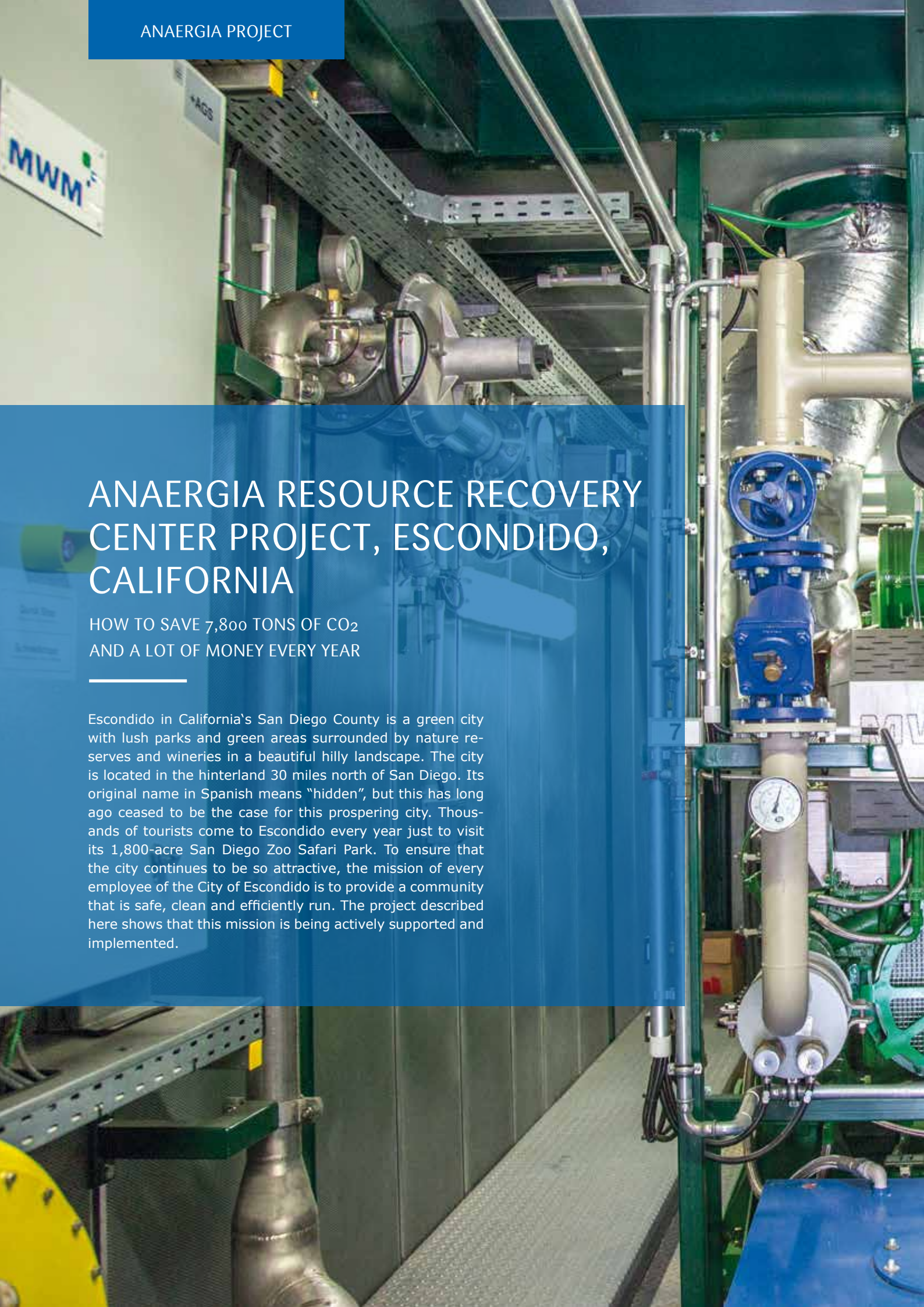
We will be happy to talk to you in person and discuss the best possible way of changing over and how to make the system part of your repowering. In so doing, you may also be able to secure additional subsidies from the German BMWi scheme (Energy Efficiency and Process Heat from Renewable Energies in the Economy (295)), which might entitle you, if you are based in Germany, to a subsidy of up to 40% of the conversion costs. ■



ANAERGIA RESOURCE RECOVERY CENTER PROJECT, ESCONDIDO, CALIFORNIA

HOW TO SAVE 7,800 TONS OF CO₂
AND A LOT OF MONEY EVERY YEAR

Escondido in California's San Diego County is a green city with lush parks and green areas surrounded by nature reserves and wineries in a beautiful hilly landscape. The city is located in the hinterland 30 miles north of San Diego. Its original name in Spanish means "hidden", but this has long ago ceased to be the case for this prospering city. Thousands of tourists come to Escondido every year just to visit its 1,800-acre San Diego Zoo Safari Park. To ensure that the city continues to be so attractive, the mission of every employee of the City of Escondido is to provide a community that is safe, clean and efficiently run. The project described here shows that this mission is being actively supported and implemented.







AVERAGING 13 MILLION GALLONS OF WASTEWATER EVERY DAY

Some 13 million gallons of wastewater are produced in Escondido and its neighboring town of Rancho Bernardo every day. This flow is treated at the Hale Avenue Resource Recovery Facility (HARRF). This highly modern plant works extremely efficiently, which is why it has already won two "Plant of the Year" awards from the California Water Pollution Control Association and the California Water Environmental Association. In this context, its operator, the City of Escondido, has decided to further increase the plant's efficiency through a cooperation project with Anaergia.

The biological treatment processes at HARRF produce enormous quantities of sewage sludge and thus a corresponding quantity of digester gases. Up to now, these sewage gases have been flared off to prevent having to release of raw sewage gases into the environment. There is a ma-





major disadvantage to this method: the CO₂ that is generated when burning the gases harms the environment, and the high-energy content of the energy source digester gases (consisting of 40% carbon dioxide and 60% methane) remains unused.

BIOGAS AND COGENERATION

To make use of the energy content of the digester gases, Anaergia has developed a plant concept that combines gas conditioning with a cogeneration unit. The biogas obtained from the digester is processed through the gas conditioning process then used to fuel two generators with outputs of 400 and 800kW. Based on the principle of cogeneration, i.e. combined heat and power generation, the generators generate both electricity and thermal energy to an extent that meets almost the entire energy requirement of the HARRF. The 300SCFM of biogas produced are used to generate 1.2MW of electrical energy and 2.43MMBTu/h of thermal energy in the plant. This

meets 75% of the plant's energy requirements in terms of electricity and 100% in terms of heat.

ECONOMICALLY AND ECOLOGICALLY SOUND

The City of Escondido reaps several benefits from the operation of the new biogas plant. First of all, 7,800 tons of CO₂ are saved annually, corresponding to the emissions from approx. 1,500 cars. This is a valuable contribution to important environmental and climate protection. In addition, the city will save around USD 10 million in energy costs (electricity and gas) over the next 20 years, funds the city can use for other projects.

As part of the cooperation project, Escondido and Anaergia agreed that Anaergia would design, build, finance and operate the plant. In return, Escondido has entered into a Power Purchase Agreement (PPA) requiring the city to purchase the electricity generated by the plant for the next

20 years at a fixed price and thus to operate the HARRF. No costs are involved in the use of the thermal energy. Anaergia benefits from long-term investment security and Escondido benefits from permanently stable electricity prices. The project was also supported by the Self-Generation Incentive Program (SGIP) of the California Public Utilities Commission (CPUC). The focus of the CPUC's work is on promoting the expansion of a decentralized energy supply. Overall, the project has created a WIN-WIN-WIN situation for the city, Anaergia and the environment.

This is a true flagship project that shows what is possible and how technical means can be used to intelligently and meaningfully reconcile ecology and economy. We would like to take this opportunity to thank the people responsible for the project – the City of Escondido and the HARRF.

Thank you. Mission accomplished. ■

NEW WEBSITE

NEW WEBSITE

**COMPONENTS FOR A
SUSTAINABLE FUTURE**



INTERNET PRESENCE AND YOUTUBE CHANNEL

ALL FRESH, ALL NEW

If you go to our website now, you will see it looks quite different from what you are used to. There's a good reason for making these changes. As you know, UTS Products has long been part of Anaergia Group, a global technology and resource recovery leader headquartered in Canada. The UTS sister companies, db technologies and Anaergia OREX Manufacturing are also part of this group. The three European companies share a comparable focus and offer technically sophisticated solutions for the municipal, industrial and agricultural sectors.

What has long belonged together has now finally come together on the internet. We have joined forces and combined our pumping, mixing, separation, screening & sorting and size reduction products into one product portfolio under one name on one website:
www.anaergia-technologies.com

EVERYTHING AT A GLANCE

The advantage of doing so is that the valuable synergies of three strong companies and brands are now visible and perceptible on one page. For instance, if you click on Separation, you will see our entire range of systems, from our small mobile separator to a large, permanently installed system with throughput of up to 30t/h.

Every product is accompanied by a detailed technical explanation and a demonstration of its application, and you can see which advantages it offers for you. You can download brochures for all products, with summaries of their key features. Our website also shows you the markets where we are jointly active: biogas, agriculture, industry, resource recovery.

THREE BRANDS, ONE VISION

UTS Products, db technologies and Anaergia OREX Manufacturing not only operate in similar markets and support each other with complementary products, however. Our three brands have been combined into one value context under the umbrella brand Anaergia Technologies and embody Anaergia Group's mission, vision and values: "We continuously improve ourselves and the world. We work as a team to succeed. We deliver on our promises to our customers and each other. We use our resources effectively." These are values that we at UTS have long been committed to and that we

live by. If you would like to know more about our shared mission, vision and philosophy, click on "About us" on the website. If you haven't already done so, please go and browse our new website at leisure, click through the menus and see what you think of our website. And while you're at it, you might also want to take a look at our Service and News sections.

YOUTUBE TOO

Some things are more easily explained visually than in words. That is why we have launched a new YouTube channel where we will regularly present new videos showing our technologies, products, applications and services in action.

An example? The first video we have uploaded onto our YouTube channel shows a conventional hydraulic mixer being replaced by our PSM mixer. But that's not all. You will also find out why the plant operator decided to go for this replacement and the benefits this will have for him.

So: we won't show you any loud and colorful advertising videos, but we will give you practical examples of applications, demonstrate their benefits and give you a better understanding of our products and technology. The next few videos, about the ZPS central pump station for example, have already been uploaded. The shooting schedule for this year is quite promising. For example, we will go into the topic of separation in detail on film. We'll keep you up to date on lots of interesting and exciting developments. ■



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
technologies@anaergia.com

www.anaergia-technologies.com

