HILLER
separation & process
Member of the ferrum Group

# NEWS 2020


## HILLER 4.0 - the next generation!

HILLER
lysat technology!

HILLER trainees at
excursion!




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# HILLER DECAPRESS DP664 DECANTERS FOR BIOGAS PLANT ALBERTSTROOM

After the start of the construction of the largest biogas plant in Europe in 2016, it started up in 2019. Each year, up to 150,000 tonnes of organic biological material can be converted into biogas. This gas is converted into electricity and heat via cogeneration (CHP). Green electricity is produced for 25,000 households and all the heat is put to good use. Ultimately, only water and a soil improver remain from the incoming biomass.

For dewatering the digestate, 2 pieces of HILLER DecaPress decanters of the type DP664 are used. The choice of the HILLER decanters has to do with the good experiences of Biogastec/ Trevi at another biogas installation at Digrom Energy BV.


## OVERVIEW

**Projects . Product applications . News . Company news . Service . Sales partners . Fairs**

# WWTP SAALFELD - HILLER RECEIVES ORDER FOR DEWATERING AND PASSES LONG-TERM VERIFICATION

In the public tender for the drainage technology at the Saalfeld sewage treatment plant, the criterion of economic efficiency was decisive for the award of the contract. Several well-known decanter manufacturers took part in this tender - the contract was finally awarded to HILLER GmbH in Vilsbiburg due to the best price/ performance ratio.

**Sustainable economic efficiency of publicly operated dewatering plants**

According to the Thuringian administrative regulation (§ 8 sentence 2 ThürVgG), the „most economical tender is the tender in which the most favourable ratio between the service requested and the price offered is achieved. All contract-related criteria are decisive, e.g. delivery period or duration of execution, operating costs, profitability, quality, aesthetics and practicality, technical value, customer service and technical assistance, commitments with regard to spare parts, security of supply". This ensures the sustainable economic efficiency of the publicly operated facilities.

**Long-term proof guarantees sustainable performance**

After the installation of the HILLER decanter DP574, the decanter manufacturer has now successfully proven in a long-term test over one year that this economic efficiency can be achieved at highest throughput rates. Acceptance took place in June 2019 and both the administration union and operator as well as the consulting engineering office were satisfied with the results.

**HILLER service centre covers all of Germany with reliable customer service**

HILLER GmbH was able to score consistently with the above mentioned criteria. With Peter Krebs, the head of the service office responsible for Northern and Eastern Germany (based in Coesfeld), HILLER is able to guarantee all customers the best possible on-site support as well as highest operational safety.

Almost 50 years of experience in the development and production of decanters speak for themselves. HILLER GmbH has already installed well over 6,000 decanters throughout Germany and also worldwide, many of them in the field of municipal and industrial sludge dewatering.

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# HUBER TECHNOLOGY ITALY AND HILLER GMBH: SUCCESSFUL COOPERATION FOR TWO DECADES

From 5th to 8th November 2019 Huber Technology, the long-standing sales partner of HILLER GmbH for Italy, presented the decanter technology of the Vilsbiburg Company at the ECOMONDO in Rimini. This fair is one of the most important environmental fairs in Europe. Numerous visitors at the stand of HILLER's partner made the exhibition a great success.

**Record year on the Italian market**

All in 2019 was an exceptional year for both companies, as never before have so many decanters been placed on the Italian market as in 2019, and with more than 50 HILLER decanters in different sizes and designs sold a new sales record was achieved. The majority of the machines went to three large waste water associations, which were convinced of the performance of HILLER technology in large-scale test runs.

**Over 200 HILLER decanters for Italy**

Huber Technology Italy and HILLER GmbH have been working together successfully in the field of centrifuge technology for almost 20 years now and together they have been able to place well over 200 HILLER decanters on the Italian market.
A real success story.

The basis of this success is equally based on the high-quality technology of HILLER decanter centrifuges as well as on the excellent advice and support of the customers on site by the Italian partner Huber.

„Thank you"


# A SLIGHTLY DIFFERENT WORKING DAY: HILLER APPRENTICES GET TO KNOW NEW DECANTER TECHNOLOGY

Instead of working at the company site in Vilsbiburg, the trainees of all apprenticeship years went on an exciting excursion together with their trainers in September 2019. The day was certainly particularly exciting for the six young men who had only started their training at HILLER in September, three of them as industrial mechanics, two as mechatronics engineers and one as product designer.

The first stop was the sewage treatment plant Wasserburg am Inn, which has been in operation since 1988 and can boast two decanters made by HILLER. Sewage treatment master Günter Grasberger guided the visitors through the plant, which treats more than 2 million cubic metres of waste water per year from the town of Wasserburg am Inn and parts of the municipalities of Edling and Eiselfing.

One of the two HILLER decanters has been reliably dewatering the sewage sludge produced there for many years. The company was so satisfied with the performance of the decanter as well as with the service provided by HILLER GmbH that the second decanter for thickening was recently purchased.

**Technical highlight: new thickening decanter equipped with HILLER lysat technology**

The special feature of the new decanter is that it is equipped with a so-called lysate dish, a special technology which optimises the mechanical cell disintegration of sludge and thus reduces its viscosity. Ultimately, this technology enables the operator to achieve optimum thickening of the sludge and save both costs and energy.

After these interesting and also instructive impressions, they went to Prien am Chiemsee, where they playfully approached the topic of team building. After a treasure hunt and various other team games as well as a joint dinner the young HILLER employees drove back to Vilsbiburg, happy but exhausted.

**Everyone agreed: an all-round successful day!**


# HILLER LYSAT TECHNOLOGY FOR MECHANICAL DIGESTION OF EXCESS SLUDGE

## 1. FUNCTIONAL PRINCIPLE OF THE HILLER LYSAT TECHNOLOGY

**The mechanical cell disintegration of excess sludge using HILLER lysat technology optimizes anaerobic sludge treatment in wastewater treatment plants.**

This is achieved by installing the so-called lysate technology in the discharge area of the decanter. This is a combination of knives which circulate in a housing with matrices. The thickened sludge is passed between the knives and the matrices. The cells of the microorganisms are either destroyed directly or the cell membrane is damaged to such an extent that cell fluid escapes.

In practice, this cell disintegration has already been proven several times. The cell disruption can be determined with the so-called COD disruption degree. This is a measure of the increase in free COD and is typically in the range of 3 to 6% for lysate centrifuges. Lysat technology is also listed in DWA leaflet M 302 as a method with simple cell disruption.

Two advantages are inherent in the system:

1. the entire excess sludge is disintegrated and not only a partial stream is treated.
2. the centrate is not changed, as it is already removed beforehand

## 2. NOVEL APPROACH TO THIS PROVEN TECHNIQUE: REDUCTION OF VISCOSITY

The lysat technology has an extremely positive influence on the viscosity of the excess sludge and reduces it permanently. Practical experience at several sewage treatment plants has shown that the digested excess sludge remains pumpable with the existing pump technology up to a solids concentration of 10%. No special high-pressure piston pumps or the like are required.
A concentration of 10% almost doubles the solids concentration in the digester.

**As soon as the surplus sludge with a higher solids concentration can be pumped into the digestion tower, new ways for energy saving and optimization in anaerobic stabilization of the sewage sludge open up.**

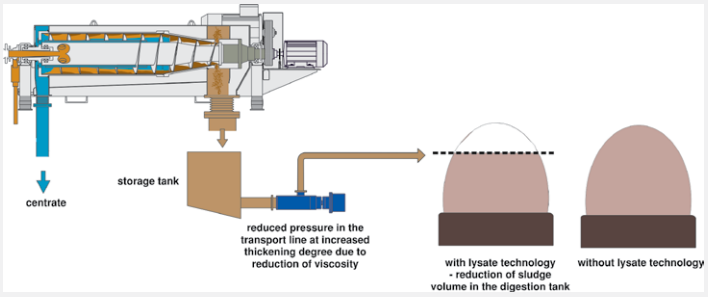
In addition, the energy for heating the digester is used specifically for heating the sludge and not for heating water.
A higher solids content in the digestion chamber requires that the installed stirring or circulation units can cope with the higher solids content.
Here, systems such as gas injection or the digested sludge mixer („screw-type bucket“) are advantageous over external circulation by means of a pump.

## 3. ADVANTAGES FOR ANAEROBIC SLUDGE TREATMENT IN SMALL AND MEDIUM-SIZED SEWAGE TREATMENT PLANTS

At present, new anaerobic sludge treatment systems such as high-load digestion or two-phase digestion are moving into the focus of operators of wastewater treatment plants. These systems are of particular interest for small to medium-scale sewage treatment plants.
The lysat technology is particularly suitable for such systems, as these systems operate the digesters with increased solids concentrations.

## 4. UPGRADING OF EXISTING DIGESTION TOWERS OF CONVENTIONAL DESIGN

As experience with some existing sewage treatment plants has shown, the higher solids concentration also helps to increase the digestion load in conventional digestion towers. In one case, for example, the construction of a third digestion tower could be postponed by years. The population growth and the settlement of industry led to a continuous increase in connection values. Until the construction of the third digestion tower, this was taken into account by increasing the solids concentration in the two existing digestion towers.




In existing digestion towers, the higher solids concentration extends the digestion time per se. This leads to an improved decomposition of the organic matter and consequently to a higher dewatering capacity of the dewatering unit downstream of the digestion tower.

## 5. GENERAL INFORMATION ON LYSATE TECHNOLOGY AND REFERENCES

The lysat technology was first used at the Prague wastewater treatment plant in 1997 and has been successfully in operation there for more than 21 years. Extensive operating experience is available in many cases, including from the sewage treatment plants in Fürth, Wasserburg and Fürstenfeldbruck.

Following a public tender based on economic evaluation criteria, the Nuremberg municipal sewage treatment plant also decided to install a plant for mechanical excess sludge thickening with HILLER centrifuges and integrated lysate tableware. The project with two thickening decanters for throughputs of up to 90 m3/h each is in the planning phase and is scheduled to be commissioned in autumn 2020.

**Simple retrofitting of the technology and almost no wear**

The wear is usually limited to the replacement of the knives. There is more than two decades of operating experience in this field.

Retrofitting to HILLER thickening centrifuges is also possible and can be flexibly mounted or dismounted without having to make any real changes to the decanter. Normally, the sizes of the electric motors installed on the thickener centrifuge are enough to cover the energy requirement.

## 6. THICKENING WITH CENTRIFUGES MORE COST-EFFECTIVE THAN OTHER SYSTEMS

Recently, centrifuges have been increasingly used again to thicken excess sludge.

Several comparative tests on wastewater treatment plants of all sizes showed that the operating costs of thickening centrifuges are significantly lower than the operating costs of competing systems, such as belt thickeners or disc thickeners.

**These advantages in operating costs are achieved by three measures:**

**1.** A so-called co-current screw is installed.

This design achieves an optimum degree of separation. The less excess sludge is returned to the activation, the less additional aeration is required. This saves energy in the air supply to the biology.

**2.** A very small amount of polymer flocculant (pFM) is dosed.
The dosage is usually in a range of 0,5 to 1,0 kg active substance of the pFM per ton of dry substance. Powdered pFM or an alternative flocculant, for example based on starch, can also be used. This allows the speed of the drum to be reduced to a minimum. The drum speed has the greatest influence on the energy consumption of a thickening centrifuge.

**3.** A larger part of the drive energy is recovered by using the so-called EcoJet weir discs.
They operate on the recoil principle, a recuperation of up to 30% can be achieved

A general advantage of thickening centrifuges is that the degree of thickening of the excess sludge can be adjusted as required. The operator can adapt the ds content to his process by simply changing the differential speed, up to 20% is possible.


# COMPACT AND READY FOR IMMEDIATE USE FOR DEWATERING TASKS: THE HILLER DECASMART

On a mobile platform the compact DecaSmart from HILLER is immediately ready for use for all dewatering tasks.
As a ready-to-connect compact unit the decanter DP45N with the corresponding periphery is completely installed and pre-assembled on a steel platform.
**Thus the decanter unit can be easily integrated into any existing system with plug & play.**
So simply connect it up and start dewatering. A wide range of solid-liquid separation tasks can be carried out with the DecaSmart, which is also used as an industrial wastewater treatment plant for industry.

In terms of process technology, HILLER offers a separation solution that is as powerful and economical as ever, with a high dry substance content in the result, and all this with low power consumption.

**The most important advantages of the decanter plant** are, among other things, the fast availability at the customer's site, the simple plug and play integration into the ongoing operation and the excellent price/performance ratio for the complete plant.


# RESOURCE-SAVING CLEANING OF SAND AND GRAVEL WASHING WATER WITH HILLER DECANTERS

All over the world, ever larger quantities of sand and gravel are needed, mainly for the construction industry. But not only the consumption of these materials is increasing, the requirements for the purity of building materials are also becoming more and more extensive.

Sand, gravel, chippings and recycled materials are contaminated by clay, wood, coal and other impurities. Washing the rock material produces sheer quantities of washing water, which must then be cleaned for reuse.

The conventional cleaning of this water in large settling ponds is expensive and wastes huge areas. In addition, these ponds must also be emptied regularly and the sedimented fines dredged from the ground and disposed of.

**Sustainable: HILLER decanters separate the impurities directly from the washing water**

The most efficient solution for cleaning washing water is the decanter, which not only requires considerably less space than settling ponds, but also cleans the water produced directly and efficiently. With its excellent separation results at high throughputs, HILLER decanter technology offers the optimum solution and is also robust and easy to operate.

Environmental protection and sustainability are ensured by reduced flocculant use as well as low energy and water consumption. The enormous savings in operating costs and the high quality and purity of the product lead to a return of investment after only a short period of use.

**Depending on the requirements and customer wishes HILLER supplies centrifuges or complete solutions such as turnkey compact or container plants.**

# HILLER 4.0 - THE NEXT GENERATION

**Industry 4.0, Internet of Things (IoT), cloud, machine-learning and predictive maintenance**
**- all terms that are now an integral part of the industry.**
In dewatering by means of decanters, digitisation also offers opportunities which HILLER is using and can therefore offer its customers high added value. Predictive maintenance, condition monitoring of the centrate, automated polymer dosing, remote monitoring of the decanter as well as the integration of the innovative HILLER control system into the overall control of the plant: all this leads to a networking of man, machine and data which ensures maximum operational reliability and efficiency for the customer.


**HILLER remote monitoring**
With the development of the in-house remote maintenance and data analysis system HILLER has already created a pioneering position on the market years ago. The flexible remote maintenance solution via a web-based service portal and correspondingly intelligent terminals considerably reduces or even completely avoids downtimes of decanter plants. HILLER remote maintenance is designed as a universal complete solution for simple and secure connection of networks via the internet. It is equally suitable for the operation of a small wastewater treatment plant as it is for connecting a large number of industrial decanters which are serviced worldwide. All you need is access to the Internet, either via the company network, via the DSL connection at home or on the road via the UMTS modem. If required, a HILLER service technician can reach the machines and plants within minutes at the click of a mouse. HILLER remote maintenance can also be optionally offered with data recording. Data is stored on HILLER's own server and analysed and displayed using dashboards (trends, real-time values). In case of alarms or maintenance messages, both the customer and the HILLER service department can be informed in advance by email. In this way, for example, appropriate measures can be taken at an early stage in the event of an upcoming oil change.

**Condition monitoring and machine-learning**
Through further development of data analysis and by means of „machine-learning", the system automatically detects whether the decanter is running optimally or whether there is a need for maintenance or readjustment. In addition, the online monitoring CMS module from Siemens can now also be connected to the HILLER remote maintenance. In this way the conditions of the main bearings, which are monitored by two sensors, can be analysed remotely and any damage can be detected at an early stage.

**HILLER control system**
Also in case of the HILLER control unit, already the new generation is available. The display of the SEE-Control unit has been replaced by the follow-up model EP380. The inner components have been advanced and improved, the external dimensions remain identically.
The following improvements have been realised:
- More efficient processor and extended RAM for faster operation
- Especially developed hardware cover for even higher protection against corrosion
- Longer battery backup for data management in case of an electrical power outage

# AUTOMATION IN DEWATERING

- CFast memory card
- Updated graphics performance
- SSD enhancement for permanent storage of the trend data for 1 year

As usual, the new display has been subjected to several prototype tests and is being delivered serially and successfully for approximately one year now.


**HILLER Centrate Control**

The highest possible process stability is also guaranteed by HILLER's automatic centrate control. This system uses an object sensor to monitor the quality of the centrate water and can intervene to regulate any deviations. A PLC module developed by HILLER is used to change the polymer or feed quantity depending on the discolouration of the centrate. This automatically optimises the polymer consumption and prevents overdosing.

**By means of these automated processes we help our customers to make their processes more efficient and sustainable and thus to reduce the costs incurred considerably. We work hand in hand with our customers and thus create real added value for the users of HILLER decanter technology.**

# HILLER GMBH DISTRIBUTES VIB VOUCHERS TO ALL EMPLOYEES

The entire economy is suffering from the current corona pandemic, and the cuts are particularly severe for small retail businesses, which had to remain closed for several weeks.

In order to make a small contribution to help our regional retailers, HILLER GmbH has ordered and distributed VIB vouchers for all employees.

The VIB voucher has been a very successful project of the Vilsbiburg Marketing Association for many years, which actively supports the interests of the retailers in Vilsbiburg.

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# APPLICATIONS OF THE HILLER DECANTER TECHNOLOGY

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Food- & Beverages

Environment & Wastewater

Mining, Tunneling & Drilling Fluids