



HILLER

separation & process

NEWS 2018



HILLER Trainees at Excursion!



HILLER Life Cycle Management



Sludge disintegration via HILLER Centrifuge

HILLER Trainees at Excursion

S. 5

HILLER Life Cycle Management

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Sludge disintegration via Centrifuge

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Dear Customers and Readers,

Expansion of the new decanter series and innovations regarding sludge thickening efficiency: all for our customer's satisfaction.

Following on from our extremely positive turnover and number of orders in 2017, HILLER GmbH started with a very good first quarter 2018.

We owe these positive developments to the great efforts of our employees and also the manufacturing investments carried out in previous years. The new CRM system has a lot of advantages leading to positive effects on the reaction times and sensitisation concerning the customer's requests. In turn, this increases the customer satisfaction.



Furthermore, our HILLER modular construction system has now been applied to all machine types. Thus our customers immediately benefit from a far better price-performance ratio. We are especially proud of our new type DP45N which is designed as skid plant and will be our exhibit at the outside area of the IFAT in Munich. These plants are not only attractive in terms of price but are also as high-performance and energy-efficient as usual. An additional advantage is the skid design. Thus the machines are supplied ready for use.

Further new developments and innovations regarding process technology will also be presented at the IFAT. Sludge thickening becomes more and more important in our sector, too. HILLER GmbH shows advances in thickening with our lysate technology. This technology enables our customers to significantly improve the dewatering behaviour by means of sludge disintegration.

You can find more information about lysate on page 10 or also live at our stand 150 in hall A1 at the IFAT. You can see, a visit in Munich is it definitely worthwhile. I would be very pleased to personally welcome you at the IFAT.

With this in mind, please enjoy reading our latest news.

With best wishes from Bavaria and a warm „Vergelt's Gott!“ - our way of saying „Thank you“ to our customers, partners and employees

Yours Sincerely
Georg Hiller

OVERVIEW

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WWTP MONHEIM – ECONOMIC SLUDGE DEWATERING THANKS TO NEW CENTRIFUGES

The Bergisch-Rheinische Wasserverband (BRW), a German water association consisting of 22 wastewater treatment plants belongs to North Rhine-Westphalia's top ten water associations. It manages the purification of about 55 million cubic meters of water coming from over 500,000 inhabitants as well as from regional industry.

Besides a constant improvement of the purification quality, the association pursues the target of an extremely economical operational model. This is achieved by continuous technical modifications and optimisations, and also by using regenerative energy, for example gas from wastewater treatment plants which is produced during sludge digestion.

New technology for dewatering and pre-treatment of centrate water at the WWTP Monheim

In the past the BRW pumped the digested sludge from its WWTP's Monheim and Hilden via pressurised pipelines to the central dewatering station Langenfeld (ZELa). It was put into operation in 1981 at the site of the former WWTP Langenfeld after the building of a crossover passage to the WWTP Monheim. Two smaller WWTP's (Hochdahl and Gräfrath) delivered its digested sludge via a barrel waggon. For a long time, the sludge at the ZELa was dewatered by chamber filter presses and the centrate water ran to the WWTP Monheim together with the wastewater from Langenfeld. After more than 30 years in operation, a new dewatering technology was required. For operational reasons on the one hand but mainly due to economic reasons, the BRW decided to relinquish the site in Langenfeld and build a new sludge de-

watering at the WWTP Monheim. Due to this a new centrate water pre-treatment plant was also established.

Economic efficiency was the decisive factor regarding the dewatering centrifuges

Today, about 50m³ wet sludge per hour are dewatered via two HILLER DP574 decanter centrifuges. These centrifuges achieve not only a high dry substance content of over 28 %, but also an excellent degree of separation. After the dewatering, the digested sludge can be buffered very well in a storage silo until it is delivered to the thermic disposal via a truck.

Innovative centrate water pre-treatment plant for anaerobic deammonification

Also for the centrate water treatment, the BRW decided to use an innovative technology – the so-called anaerobic deammonification which achieves a significant reduction of the nitrogen concentration in the centrate. This process is particularly useful for wastewaters with higher nitrogen concentrations as for example for centrate from the digested sludge dewatering opposite to the conventional nitrification / denitrification.

All these innovations help the BRW to reach its aims regarding environmental sustainability and economic efficiency. BRW were more than satisfied with the collaboration and execution of this project by HILLER GmbH.



HIGH-PERFORMANCE CENTRIFUGE OR SCREW PRESS?

New test series confirms the need for flexibility in machine sludge dewatering.

The decision to invest in a new sludge dewatering system not only has a lasting impact on the operating costs of a wastewater treatment plant, but also means a long-term commitment to the technological and operational flexibility of the selected dewatering system. Unfortunately, this realisation doesn't often come until later and at that point it is often no longer possible to prevent unnecessary costs and aggravation.

Changing conditions resulting from new dischargers, new machine components in the field of mechanical pre-sedimentation, or perhaps simply a change in the flocculant product being used, in other words ultimately any intervention in the procedural chain of



wastewater treatment, has a greater or lesser effect on the final sewage sludge product and its dewatering properties! What operating firm is able to give reliable forecasts 15 to 20 years in advance? Often it is simply the normal seasonal fluctuations that a sewage treatment plant needs to be able to handle which lead to significantly altered sludge conditions.

For this reason, practical system comparisons between already installed screw presses and a HILLER test centrifuge were conducted in 2017 and documented together with the operating companies. The results speak for themselves: a decanter is more flexible in all sludge conditions and therefore also more economical in the long term.

In the current competition between high-performance centrifuges and screw presses, it has become obvious that the better options for the specific optimisation of the sludge dewatering unit's operating parameters in line with the product being processed means clear advantages for companies operating centrifuges. Thanks to options for modifying the bowl speed, differential speed and pool depth, the best possible separation of the solid/liquid phase can be achieved in all sludge conditions.

It was exactly these types of changes in the general conditions that led to a series of commissioned control pressings between installed screw presses and a HILLER test centrifuge in 2017. The economic differences in dewatering results, polymer and energy consumption as well as the level of separation documented in collaboration with operating companies were so significant that further action is now required.

In addition to the cost factor of the normally much better dewatering results from a centrifuge, which can be easily evaluated in monetary terms, the main topic of discussion is the direct comparison of the „insidious“ backflow that is harder to classify.

The significantly lower level of filtrate separation achieved with a slotted or perforated screen and the regular need for rinsing cycles of the rotary screen, lead to an ongoing, recirculated backflow of the sewage treatment plant with the finest solid particles already conditioned with polymers. This is a problem which, unfortunately, is largely underestimated in the initial decision-making process.

We therefore urge decision-makers to make this type of long-term investment decision only after a direct, practical system comparison on their own plant. The manageable budget and time required is more than justified by the necessary sustainability of this decision.

Are you interested in checking the economic efficiency of your current dewatering system?

HILLER SALES

MAIL: sales@hillerzentri.de

PHONE: +49 8741 48-319

HILLER APPRENTICES VISIT THE WASTEWATER TREATMENT PLANT AT STRAUBING

In September 2017, HILLER was again pleased to welcome five new apprentices for the following professions: industrial mechanic, mechatronics technician and technical product designer. As in previous years, we again made an excursion with all apprentices to get to know each other and the company.

The group started with a very impressive tour through the wastewater treatment plant at Straubing (Bavaria), where a HILLER decanter is in operation. Dr. Jürgen Pettrak explained the wastewater process starting with the arrival at the wastewater treatment plant up to the return into the river Danube as clean water. In addition to the wastewater from the municipalities around Straubing, they also treat sewage sludges from other communities as well as so-called co-substrates (e.g. wastewaters from pickled cabbage production or poultry slaughtering). The additional processing of these substrates enables the wastewater treatment plant Straubing to produce a lot of gas

to be converted to power and heat. This reduces the wastewater fees and the wastewater treatment plant could also be operated independently if the dikes were closed and the power supply were cut in case of flood.

After this interesting insight into the waste water management the group's next aim was the city of Regensburg where the HILLER team made a GPS treasure hunt. Split in 3 groups and equipped with a GPS device, they had to find the code for a treasure box. The only help were the coordinates.

After this exciting and funny treasure hunt, they finished the day in a cosy beer garden with view to the famous stone bridge of Regensburg.



HILLER LIFE CYCLE MANAGEMENT...



A genuine partnership for the entire product life cycle.

HILLER presents its LCM promise to existing customers. „We don't just want to make sales, we want to create partnerships with our customers to provide support for the entire product life cycle.“

Over its many years of operation, HILLER has established a solid reputation as a manufacturer of high quality and robust decanter centrifuges and complete systems for solid/liquid separation. Many of our decanter plants and complete installations are in operation internationally and perform their work with total reliability every single day. The requirements



of our customers for operating reliability, machine availability and reliable preventative maintenance management are constantly increasing.

In purchasing a HILLER product, our customers not only buy our equipment, but are automatically integrated into our Life Cycle Management system. HILLER guarantees professional, effective and results-oriented support for its existing customers. This enables our customers to work successfully and profitably with HILLER products. Often a HILLER decanter centrifuge is the core system within a highly networked production plant. A machine failure would therefore have serious consequences on the operating results. A lack of plant redundancy, combined with highly sensitive production processes, often in 24/7 or seasonal operation with highly perishable products, can turn a machine failure into the worst case scenario.

For this reason, at HILLER we have always offered a preventative maintenance concept to protect our customers from potential damage and the associa-

ted loss of production and profit thanks to proactive customer care.

Our stated intention to provide a smooth-operating team of optimally trained service technicians, a wide range of available original spare parts and a finely tuned maintenance support concept with a broad range of offerings, has always played a major role.

This support chain is maintained with on-site inspection and process optimisation, high quality servicing both at the customer's site and at our Vilsbiburg plant, as well as innovative customisation concepts to increase efficiency with new technological developments.

HILLER has already received active support in this comprehensive challenge with cross-departmental SAP ERP software to optimise processes. Now HILLER plans to extend this 360 degree support for its customers to a whole new level using customised CRM software.

The customer always comes first, and this has also been the key factor in implementing the new software.

During the implementation phase, it was important to us that we were able to optimally map all customer-focused areas such as sales, marketing, application technology and after-sales service using our new CRM software. A second critical factor for success was the compatibility of our ERP system's interface with the new software in the customer area. In the shape of the agile and solutions-oriented CRM software house ADITO, HILLER found the perfect partner in the region to fulfil our requirements for a made-to-measure CRM system. This system could be linked up to our ERP master system, SAP, without any conflicts.

... A GENUINE PARTNERSHIP

In after-sales service, implementing the CRM system was carried out in two stages. First, the software was linked up to our service backoffice on the existing SAP system. This was followed by the go-live of the individual software components such as service dispatch planning, customer relations management, customer history management, as well as materials and spare parts management. With these module activations alone we have succeeded in achieving a high level of data and process reliability. Thanks to fast and trans-



parent data access, we can quickly create instructions for our service technicians in the event of faults or indicated optimisations.

Immediate problem-solving thanks to real time service.

But HILLER wanted more. In the second implementation stage, we will be equipping our entire service team with mobile tablets and customise the ADITO Mobile App to fit the needs of the HILLER centrifuge world. By mid-2018, we will be able to organise the entire material flow chain, various stock levels and spare parts management in real-time for our existing customers. In addition, we will be able to produce digital deployment reports with image documentation, technical sketches, as well as legally compliant documentation and test reports for maintenance,

commissioning, site service visits, and distribute these documents in real-time.

Our service technicians will also have access to a wide range of information on the plant and the machine history to facilitate optimum decision-making in dialogue with the customer regarding the next logical steps in the process. Utility films will be available on the mobile units to maximise knowledge transfer to customers and operators during training and instruction briefings.

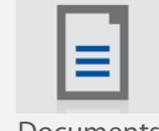
Last but not least, our integrated maintenance management system with suggested data for an entire plant decade will enable us to achieve unprecedented speed and quality to plan our technician scheduling. This digital deployment planning, combined with a data pool of service technician expertise, guided by a route planner, will reduce start-up times and lead times for our technician assignments.

We look forward to the new CRM software support in after-sales service and are convinced that this will enable us to tailor our service support even more closely to the needs of our customers. This will see us offering our customers additional benefits in terms of operational safety, speed of response and targeted service activities as well as comprehensive improvements for our existing customers to guarantee successful operations

Author: Bernd Ramsauer, After-Sales Service Manager



Training



Documents



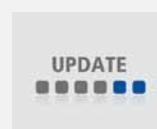
Maintenance



Knowledge



Spare Parts



ERP <-> CRM



History



Resource Planning

AFTER 10 YEARS IN OPERATION: THE CHANGE OF JUICE EXTRACTION TECHNOLOGY HAS REALLY PAID OFF

A very positive result for the HILLER decanter after 10 years of operation in juice extraction at „ORO Obstverwertung“, a German company producing juice.

ORO Obstverwertung e. G. located in Rohrdorf is a state-of-the-art juice producer. The cooperative was founded in 1958. Its 107 members are mostly fruit producers from the region. The managing director, Joachim Wiesböck has been working for ORO for more than 30 years. All along, he has opted for the latest efficient and innovative technology, which is surely one of the reasons for the long-lasting success of the fruit pressing plant. Mr. Wiesböck has also replaced the old juice pressing technology with a new HILLER decanter centrifuge, type DF54-402, ten years ago. Since then, the two-phase centrifuge has been used to separate the juice from the pomace.

The closed decanter system enables highest quality.

By means of this technology without air inclusion, a pure apple juice is produced in which much more valuable ingredients are preserved. The freshly pressed juice is immediately processed further. The juice is heated up to 90° Celsius via short-term heating and remains there for 90 seconds at this temperature for pasteurisation. Afterwards, it is cooled down to the storage temperature and stored in large-volume tanks. Finally the fresh juice is filled into bottles without any additives.

Natural ingredients and antioxidants are preserved.

Thus, a unique taste experience occurs: especially the cloudy apple juice has an extremely smooth and full-bodied flavour. This taste occurs because of the higher proportion of finest pulp. Besides this, less ingredients are damaged and the healthy natural antioxidants are preserved due to the subsequent closed raw juice processing. This technology alone achieves an adequate cloud stability. So the settling of finest particles at the bottom of the tank or bottle is prevented. Therefore, the removal of the starch via a separator is not necessary.

Highest German award for ORO juice

In both 2011 and 2016 the exceptionally high quality of the juice made by ORO was honoured with the most valued award for fruit juice: the “Bundesehrenpreis vom Bundesministerium für Ernährung und Landwirtschaft” (an award from the Ministry of Agriculture and Food). Mr. Wiesböck is very proud that, thanks to the HILLER decanter technology, he is able to offer his customers a particularly high-quality and gently processed juice.



Additional information on the technology

Production of naturally cloudy apple juice

By using the latest decanter technology, it is possible to produce high-quality apple juice, also from storable fruits, without adding enzymes and antioxidants. The yields as well as the cloud stability are exceptionally high. For the first time, it is possible to process storable fruits the whole year through and achieve a premium quality juice at the same time. Here, yields of around 75-83 percent by weight can be achieved at a one-stage process without enzymatisation. The result depends also on the quality of the raw products. The cloudiness of the juice immediately after the decanter process is in the range of <math><2.5\%</math> (percent by volume). It is remarkable, that the decanter juice is very cloud-stable and free from unresolved starch (typically by means of a separator). Results of all tastings made the decanter juice was always rated to be excellent.

HILLER SERVICE OFFICE FOR NORTH AND EAST GERMANY

Ensures a strong and reliable partnership with our customers.

To provide our customers with the best possible support during the whole decanter life cycle, the HILLER GmbH founded a further Service office already at the beginning of 2017. Since then, Peter Krebs - head of this new Service office for North and East Germany, takes care of the needs of the existing and new HILLER customers with full commitment. Mr. Krebs would be pleased to assist you starting with the installation of the machine and commissioning, as well as repairs and spare parts organisation up to consulting personally or by telephone.

Together with both area sales managers for North and East Germany, Michael Wielicki (North Germany) and Martin Götz (East Germany), the HILLER Team is located directly in your region.

Please do not hesitate to contact us:

Service Office North

Mr. Peter Krebs
Kirchstraße 7A
48653 Coesfeld

Phone +49 2546 4459990
Mobile +49 162/2911372
peter.krebs@hillerzentri.de

Hiller GmbH Office East

Mr. Martin Götz
Schwalbenholzstrasse 2
84137 Vilsbiburg

Phone +49 8741 48-134
Fax +49 8741 48-710
Mobile +49 162/2914620
martin.goetz@hillerzentri.de

Hiller GmbH Office North

Mr. Michael Wielicki
Walsroder Straße 19 G
29683 Bad Fallingbostal

Phone +49 5162 902575
Fax +49 5162 979400
Mobile +49 162 29 14 650
michael.wielicki@hillerzentri.de

For further information regarding HILLER Service and After Sales please visit our homepage: <https://www.hillerzentri.de/service.html>



SLUDGE DISINTEGRATION VIA CENTRIFUGE - ADVANTAGE BASED ON EXPERIENCE

HILLER delivers new, expert, practical data.

Rising sludge disposal costs mean continual pressure to optimise sludge treatment at sewage treatment plants.

The approach of using a disintegration process to generate technical and economic advantages for further sludge treatment is not a new one. A wide range of physical and chemical solutions all aim to achieve the following overall goals:

- Reduced viscosity and better pumping properties
- Increased degradation of the organic part (i.e. extended well time in the digestion tank)
- Increase in gas yield
- Improved drainage behaviour

HILLER GmbH can demonstrate a specific advantage in this field of application as a manufacturer of high-performance centrifuges.

Basic procedural approach:

Waste activated sludge (WAS) is generally mechanically thickened prior to mixing with the primary sludge, in order to achieve an optimal consistency in the raw/mixed sludge subsequently before digestion. The volume of sludge added to the digestion tank is therefore reduced by means of a waste activated sludge thickening process. This provides energy savings and better digestion tank utilisation and/or longer retention times in the digestion stage. This results in reduced amounts of digested sludge, higher gas yields, and improved dewatering properties of the digested sludge.

HILLER centrifuges can be operated with an additional lysing device.

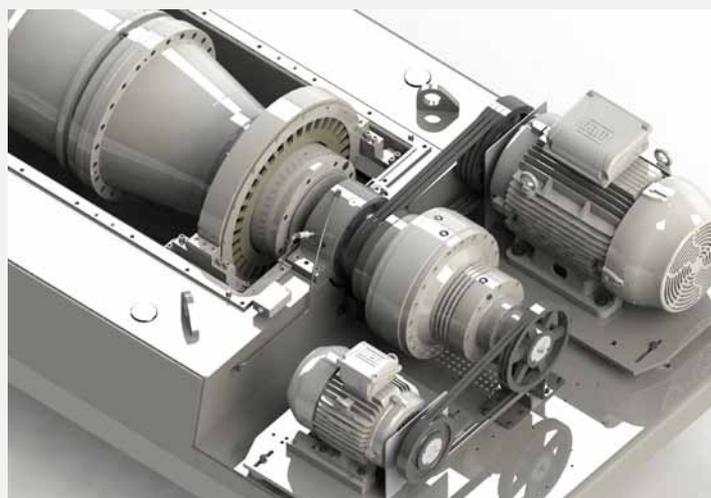
This lysing device is attached in the area of the sludge discharge openings and uses the existing kinetic bowl energy. This means that the additional power

consumption of 0.02 to 0.05 kW/kgTR can also be kept low.

The disintegration effects in the thickened waste activated sludge (WAS) essentially take place by impact and shear forces generated by the rotating knife blades in the labyrinth and the lysing chamber at high circumferential velocity. The WAS disintegration is completed in the full flow of the thick sludge entering the lysing device, meaning that only the WAS thick sludge thickened in the centrifuge is lysed and no lysate enters the separated centrate water.

Mechanical construction:

The lysing device consists of a labyrinth with a lysis chamber fitted with window openings. Fork blades fitted onto the centrifuge bowl rotate through the ly-



sis chamber, and these blades are protected against wear with a tungsten carbide coating. From the discharge openings of the centrifuge, thickened waste activated sludge thrown out at high speed flows through the lysis chamber in the axial direction.

Easy on-site removal of the lysing device and unrestricted operation of the conventional thickening decanter are also possible.

- HILLER DELIVERS NEW, EXPERT, PRACTICAL DATA

Other than the lysing device, no additional plant technology is required.

Equipping a HILLER thickening centrifuge with a lysing device therefore combines the following processes:

- WAS thickening
- WAS disintegration
- WAS liquefaction (change in viscosity of the thickened WAS)

HILLER is currently the only decanter manufacturer able to provide references for self-constructed plants and to demonstrate the corresponding design and process engineering experience. At present this topic is being examined in a research project under

external academic supervision at a municipal sewage treatment plant in Southern Germany to establish further detailed data on this subject.

In a few weeks' time there will be further proven information available for reliable, economic comparisons of plant operations with and without disintegration measures based on a HILLER thickening decanter.

At this year's IFAT in Munich, HILLER will be exhibiting a decanter with lysing device and presenting the findings to visitors to the exhibition stand (hall A1, booth 150).



HILLER decanter without lysing device



HILLER decanter with lysing device



DP484 with lysing device



DP484 with lysing device



HILLER

separation & process

HILLER GmbH
Schwalbenholzstraße 2
84137 Vilsbiburg

Phone +49 8741 48-0
Fax +49 8741 48-139

info@hillerzentr.de
www.hillerzentr.de

APPLICATIONS OF THE HILLER DECANter TECHNOLOGY

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