

GEA environmental Decanter lines

safeguarding our resources





CONTACT

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A close-up photograph of several green leaves, likely from a corn plant, with several clear water droplets resting on their surfaces. The background is a soft, out-of-focus green, suggesting a natural outdoor setting. The lighting is bright, highlighting the texture of the leaves and the clarity of the water droplets.

VIDEO

We help protect,
feed and power
the world

EVERY DROP COUNTS

More efficient water and wastewater management requires ecologically and economically ground-breaking technology for municipalities, industry and agriculture. GEA environmental Decanter lines offer sustainable solutions for this ...

Every drop counts

The thirst for water is growing in municipalities, industry and agriculture. This is driven by megatrends such as the ever-increasing global population and urbanization. But fresh water is a rare commodity on our planet: only around 1% is directly available.

The demand for water will increase by 40% worldwide by 2030. In order to meet this demand in a sustainable way, more efficient water management is required. This applies to wastewater treatment and sludge treatment in municipal and industrial wastewater treatment plants, as it does in agriculture.

GEA – decades of expertise as a sludge specialist

To meet these challenges, we have developed the GEA environmental Decanter lines. These can turn sewage sludge, manure and fermentation residue into a recyclable resource to generate energy and reusable material – with the best possible yields.

Fresh water – a dwindling resource



9

By 2050, the world's population will grow from 7.7 billion today to **over 9 billion people**.



2/3

Two thirds of these people will live **in cities**.



1%

97.5% of the world's water is salt water. And of the remaining 2.5%, **only around 1% is directly available as fresh water**.

We just want water – clean water

Water shortages are one of the biggest environmental challenges of the century. But steps can be taken for clean water and better use of this valuable resource.

Learn more »»»



VIDEO

GEA environmental
Decanter lines

We help protect, feed and power the world

GEA is one of the largest technology suppliers for food processing. It also serves a wide range of other sectors such as environmental technology, with a focus on wastewater, sludge, manure and fermentation residue treatment.

We help to protect, feed and power the world. We stay true to this motto by providing innovative solutions that combine environmental protection with high societal benefits and cost effectiveness. Our products, components and processes help to make costs more efficient for users by:

- Protecting water and limited raw materials and feeding them back into the natural cycle
- Optimizing production quality and making food safer
- Using existing energy sources in a way that protects the environment and developing new energy sources

Centrifugal separation technology made by GEA has been setting standards worldwide for more than 125 years – with perfectly functioning processes and production cycles.

We call it “engineering for a better world”.

Safeguarding our resources

GEA environmental Decanters provide the highest dewatering levels. In practice, having less sewage sludge to dispose of saves transport costs and lowers energy consumption for drying and burning, and thereby reduces CO₂ emissions. It’s a win-win situation for wastewater treatment plants and the environment.



High-performance decanters from GEA are there for you through thick and thin

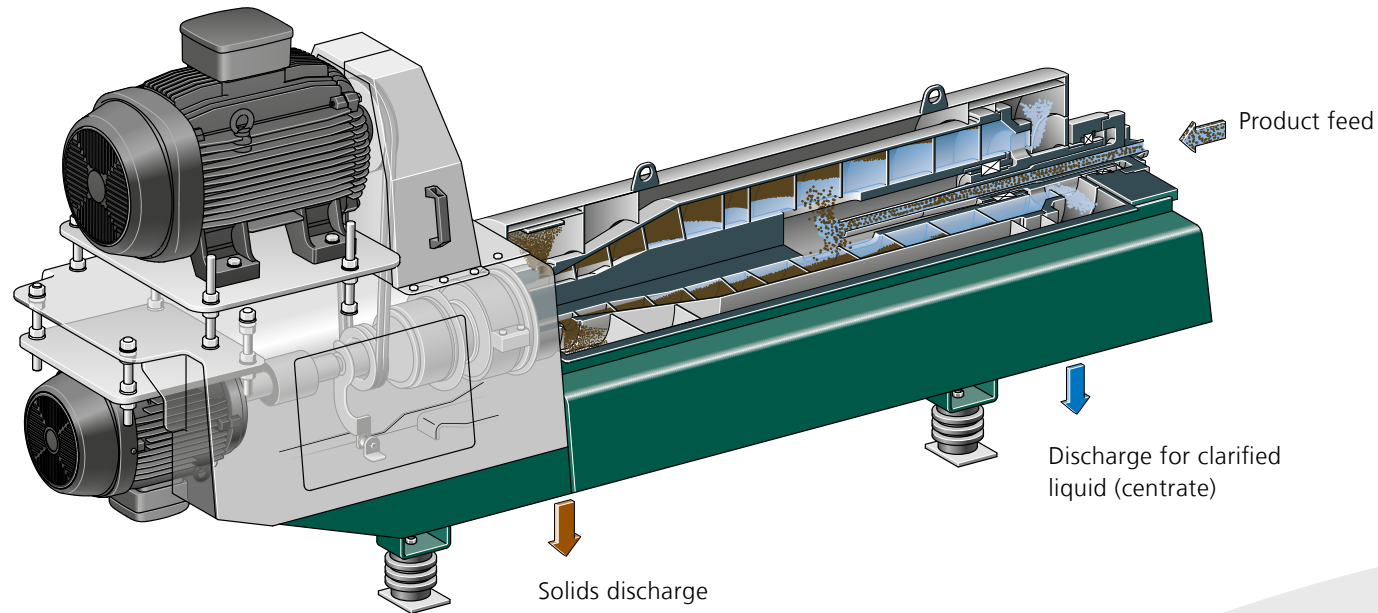
Their strengths lie in using continuous solid-liquid separation for optimum processes with the best results. The perfect decanters for both dewatering wastewater sludge and the treatment of biomass.

Decanter centrifuges from GEA are the perfect solution when the solids content in suspensions is particularly high. They ensure continuous clarification with maximum dewatering, and separate liquids while also removing solids. This is based on a high bowl speed, a powerful drive and a scroll speed which automatically adapts to the solids load in the feed.

The development of our decanter portfolio is based on more than 125 years of GEA expert knowledge as well as the ever-changing requirements and findings from various areas of application and use. This allows us to make robust, high-performance decanters which provide the best possible added value for users in industrial, municipal and agricultural wastewater treatment.

Also known as solid-wall scroll centrifuges, decanters work in a similar way to tubular centrifuges but have a horizontal scroll which rotates with a low speed difference to the bowl. In this process, the solids are continuously separated and discharged. The result is high separating performance in a small space.

2-phase decanter specifically for the requirements of dewatering of industrial and municipal wastewater sludges



GEA DECANTER FEATURES:

- Maximum productivity
- High-quality materials
- Small footprint
- High degree of operating reliability, availability and low wear
- Less manpower required
- Simple to operate
- Low operating costs
- Wide variety of potential applications
- Ease of maintenance

Optimum dewatering reduces costs for sludge disposal

The targets set by water protection policies place ever more stringent requirements on wastewater treatment. A further increase in sewage sludge volume is therefore expected across the world, increasing preparation and disposal costs.

Municipalities and industries are faced with the task of disposing of the increasing amounts of sewage sludge in an environmentally friendly and cost-effective way. They must also adhere to the latest recycling requirements for materials such as phosphorus and nitrogen. Optimum, economical dewatering of sewage sludge is therefore a key step in all types of disposal, including incineration, landfilling and agricultural soil application.

Focusing on the essentials

The type of disposal and associated requirements for the level of dewatering determine the economic efficiency of dewatering equipment. Every increase in concentration of solids is expedient with regard to incineration and saving on disposal and transport costs.

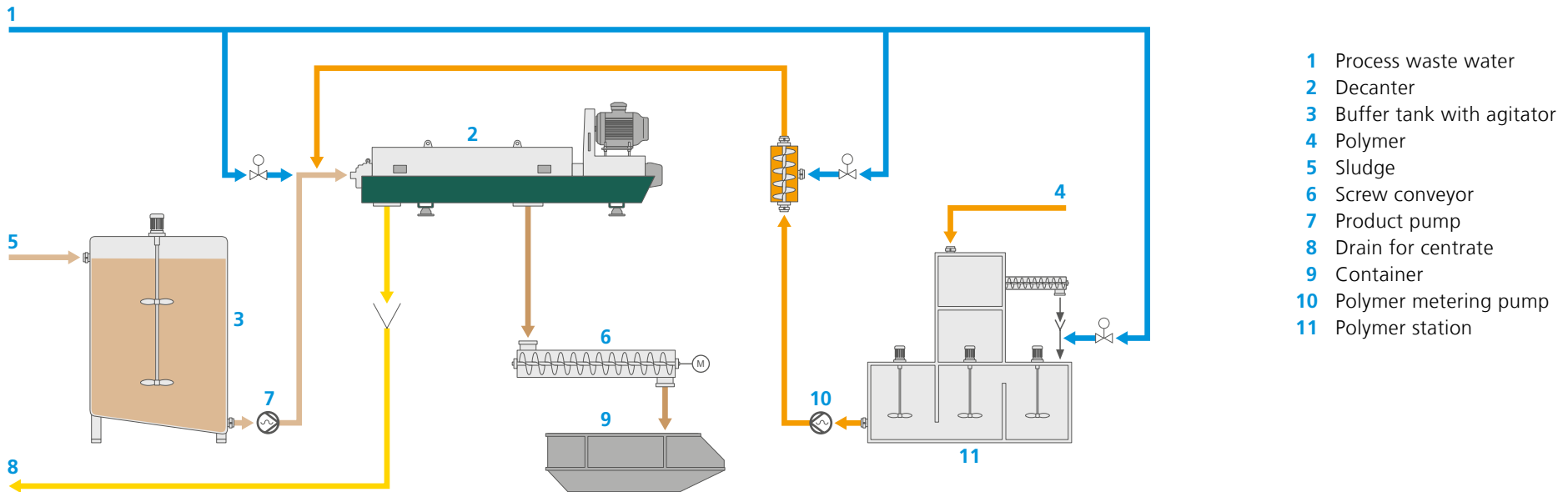
Less is more

Decaners from GEA ensure a high level of dewatering with significantly reduced sludge volumes thanks to, for example, a high g-force for optimum separation and process-optimized torque control.

Your benefit: Significant cost reductions

- For transport and landfill
- Thanks to reduced energy consumption during drying or incineration

Sludge dewatering



It's worth it: 90% less waste sludge

Decanters from GEA achieve efficient thickening of sewage sludge. A key element is the GEA varipond® control and regulation system.



Legal obligations for eliminating phosphorus and nitrogen as well as process changes in wastewater treatment make it necessary to thicken the sewage sludge using a machine. GEA decanters generally reduce the volume of sewage sludge by up to 90%. The patented GEA varipond® control and regulation system makes a key contribution here. It ensures consistent dry matter values in the output, even with fluctuating concentrations in the feed.

GEA varipond® won't leave you standing in the rain

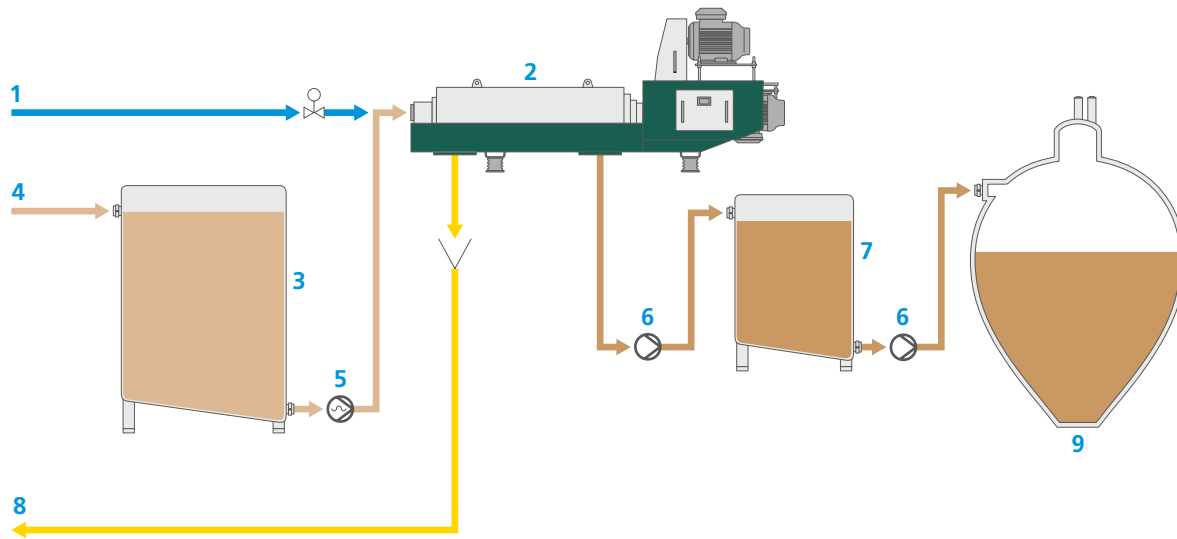
Sewage treatment plant operators are familiar with situations like these: a sudden downpour and the sewer system can barely contain the water volumes, which are overloaded with high quantities of solids such as swollen sand and other residue. When this happens, a fast-response system like GEA varipond® is required. The name stands for "variable pond depth" while the machine is running. Previously, varying feed conditions meant that decanters had to be shut down and rebuilt in order to achieve a consistent concentration. Today, varipond® easily and securely enables fully

automated adjustment of the centrifuge to match changing feed conditions during operation. The dry matter content of the sludge is measured online. This achieves a level of accuracy of $\pm 0.3\%$ under operating conditions. Unsupervised operation at night or weekends is therefore also possible. The constant concentration facilitates the optimum configuration and efficient operation of the digestion tower at the wastewater treatment plant. Better digestion of the sludge is ensured and higher gas yields can be achieved thanks to the increasing quality.

The benefits at a glance:

- 30% less sludge
- Fully automated feed control
- Reduced transport and waste management costs

Sludge thickening



- 1 Process waste water
- 2 Decanter
- 3 Buffer tank
- 4 Surplus activated sludge
- 5 Product pump
- 6 Solids pump
- 7 Storage tank
- 8 Drain for centrate
- 9 Digestion tower



VIDEO

Mobile
decanter systems

Keep on moving – with mobile decanter systems from GEA

With their modular, plug-and-play design, mobile decanter systems from GEA have been developed for flexible process integration as lorry trailers or standardized sea containers.

The decanter units are modular solutions that can be integrated quickly and easily on our customers' premises with ongoing operation of existing sludge treatment systems. This makes them suitable for in-depth tests on a large scale or when rapid help or flexible use is required.

Easy process integration for maximum flexibility and cost effectiveness

For efficient global logistics, the individually adaptable mobile systems have all the necessary components and are fully piped and ready for immediate use. This means that they can handle temporary peak loads during operation when processing wastewater. You can also test the potential for increased performance and savings using GEA decanter technology when treating wastewater, manure or fermentation residue under real-life conditions before you invest in the existing system technology.

Everything you need

All components are installed on a frame: polymer station, control cabinet, feed pump, solids conveyor and water supply including flushing device.



GEA environmental Decanter lines – safeguarding our resources

In municipalities, industry or agriculture, GEA environmental Decanter lines pro and prime play a key role in efficient wastewater treatment. With process results which ensure economical and environmentally friendly system operation.

The decanters demonstrate a high dewatering performance when processing sludge, manure and fermentation residue. This guarantees the best yields for reusable solids and water with optimum volume reduction. The dried residual sludge can be removed with significant cost savings, used as fertilizer or fed into a biogas system.

GEA environmental Decanter pro

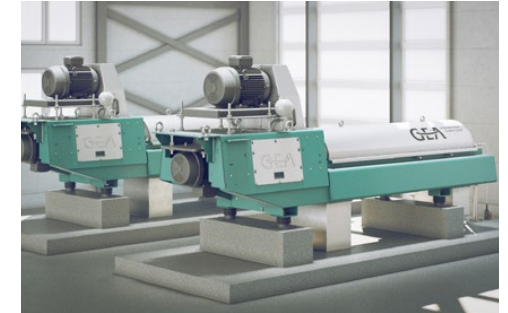
- Standardized machine configuration for plug & play integration in processes with little need for adjustments
- High performance, economical investment and lifecycle costs
- Output range: 1 m³/h – 120 m³/h

GEA environmental Decanter prime

- Can be flexibly configured for highly complex preparation processes with individual requirements and large capacities
- Excellent performance and economical lifecycle costs
- Output range: 15 m³/h – 300 m³/h



GEA environmental Decanter pro: high level of standardization makes it perfect for plug-and-play integration



GEA environmental Decanter prime: flexible specialist units for highly complex processes with large capacities





Highest uptime reliability,
with GEA Service.



GEA Service – For your continued success

Reduce the life cycle cost for your plant and equipment.

Getting you started –

Seamless support for instant productivity and performance

We start as we mean to go on, a supportive and committed partner for life.

We plan and build around individual needs, sharing process knowledge, training employees and supporting operators. This gets our customers up and running and ensures a smooth, seamless on-going service.

Keeping it running –

The cost-efficient way of ensuring safety and reliability

To ensure that our customers benefit from continuous production processes with as little downtime as possible, we provide fast support, efficient maintenance and top-quality spare parts. These are available whenever and wherever needed.

Constantly improving –

Sharing our knowledge to safeguard your investment

We safeguard our customers' investments by constantly looking ahead. Through modernizing or upgrading equipment and optimizing processes to meet changing needs and new market demands. We are always working to increase production efficiency and ensure peak performance.

Together with you –

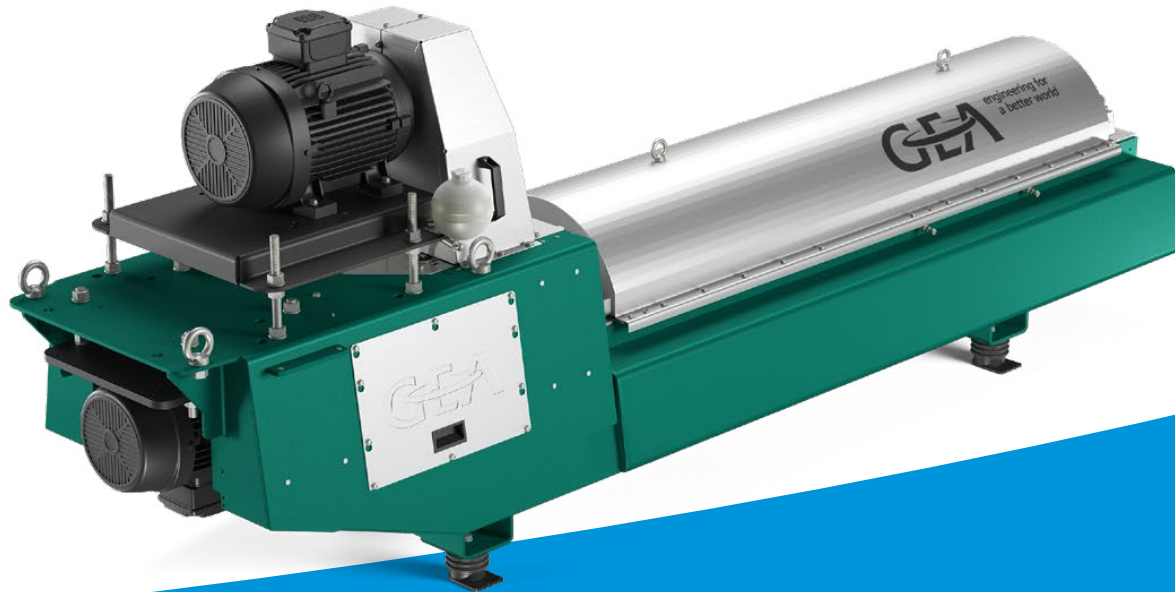
Enduring commitment to you and your business

Commitment to our customers and their business means investing in their objectives, their risks and their future success. We work in ever-closer collaboration, providing on-going system audits and on-site support through innovative new service models in order to generate improved performance.

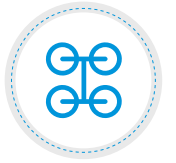


GEA biosolids Decanter for municipalities

First-class separation performance for dewatering and thickening sewage sludge, treating drinking water and recycling valuable materials – with up to 50% less energy consumption.



Solving sewage sludge issues requires maximum concentration



Municipalities across the world have to cope with an ever-increasing volume of sludge. Economical and environmentally friendly disposal depends on the concentration of solids.

International water protection policies prescribe sustainable wastewater treatment in particular. For municipalities, the solution lies in dewatering sewage sludge with as little residue as possible. The higher the solids concentration of the sewage sludge, the more economical and ecological the subsequent processes will be through to transport and disposal.

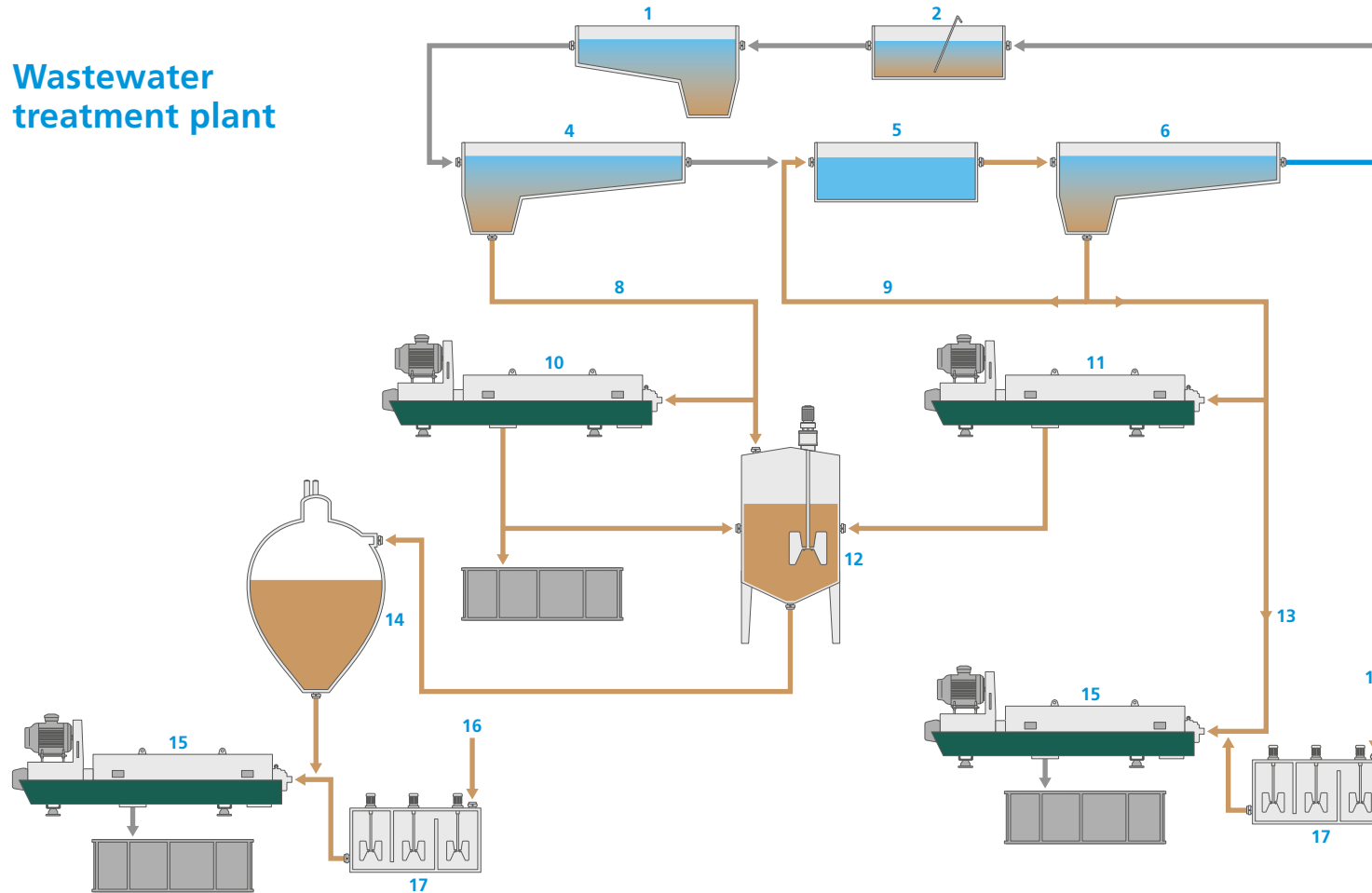
Pioneering GEA technology for wastewater treatment plants

GEA supports wastewater treatment plants by thickening and dewatering sewage sludge with high-performance decanters which set standards in the industry. The scroll centrifuges can also be fitted with peripheral devices, pumps, conveyors, polymer stations and control units. A comparative test has shown that our technology is pioneering in terms of dry substances, separating precision and the low consumption of polymer.

The benefits at a glance:

- High throughput capacities with maximum separation precision
- Permanently low disposal costs
- Minimal consumption of polymer

Wastewater treatment plant

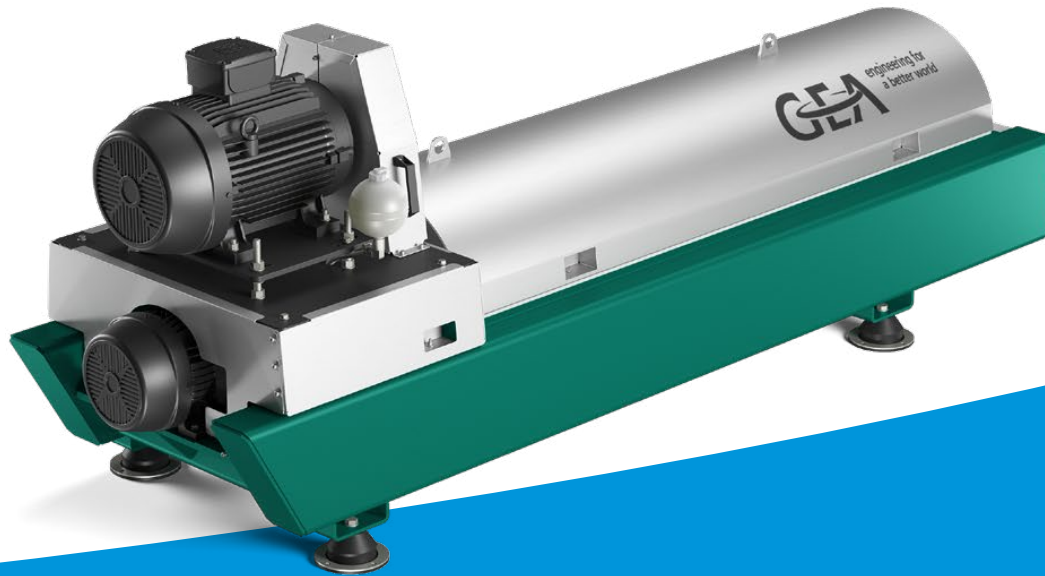


- 1 Sand trap
- 2 Rake
- 3 Wastewater
- 4 Initial clarification
- 5 Activation
- 6 Follow-up clarification
- 7 Treated wastewater
- 8 Primary sludge
- 9 Secondary sludge
- 10 Thickening/dewatering
- 11 Thickening
- 12 Mixing tank
- 13 Tertiary sludge
- 14 Digestion tower
- 15 Dewatering
- 16 Polymer
- 17 Polymer station



GEA sludge Decanter for industries

Specifically for the treatment of process and cleaning wastewater as well as sludge dewatering in industries. For production processes with optimized costs and maximum availability, quality and efficiency.



Clean drinking water: natural but precious



You just need to turn on the tap and out comes fresh water. However, this is not the case for around 2.2 billion people across the world. According to the UN World Water Development Report 2020, this is how many people do not have regular access to clean drinking water.

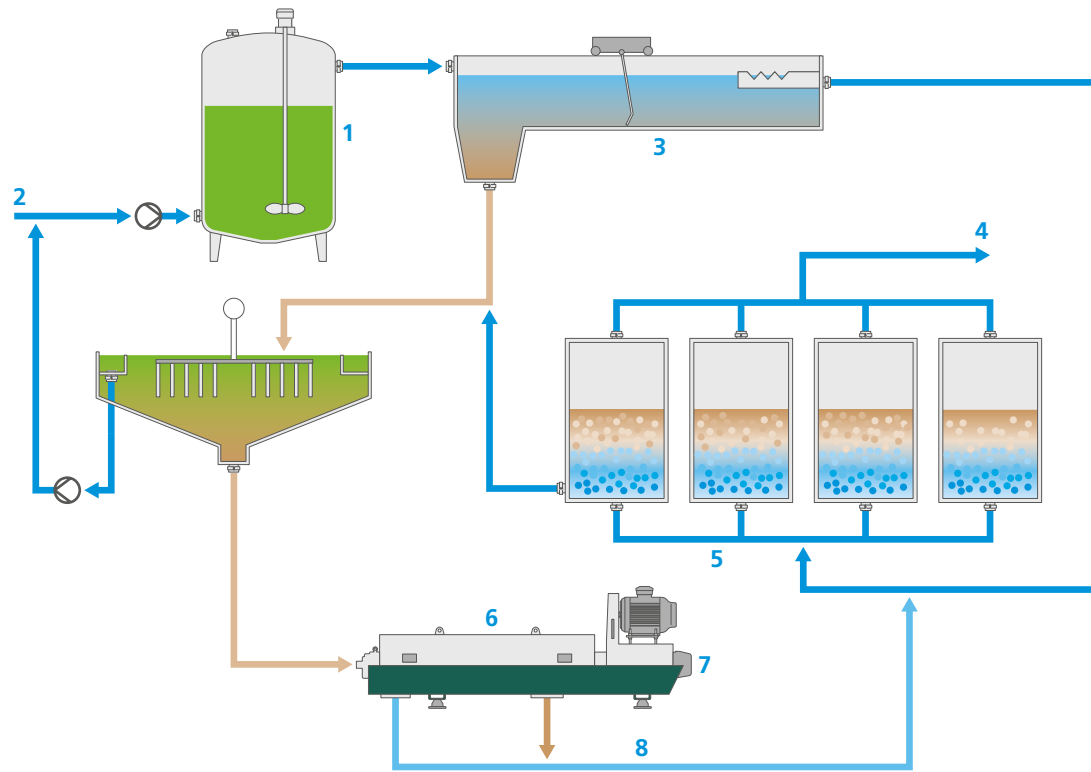
69% of the world's available fresh water is used by agriculture. 19% is taken by industry and only 12% of water withdrawal is down to private households, cities and communities. The effective treatment of surface and ground water will therefore become increasingly important in future with the growing population and our rising impact on the environment.

The most common impurities caused by both nature and humans include humus and composted plant parts, as well as minerals, organic impurities, chemical residue, bacteria and viruses.

Drinking water treatment with specialized clarifying decanters

GEA sludge Decanters which have been specially developed for optimum clarification performance and solids dewatering are used for sludge dewatering in drinking water treatment plants. This is achieved through the high bowl speed and scroll torque in conjunction with regulation of the differential speed. This works in a similar way to the solids load. The closed construction and installation prevent aerosols from leaking out and thereby protects people and nature.

Treatment of surface water



- 1 Chemical treatment
- 2 Untreated water
- 3 Sedimentation
- 4 Chlorine added to filtered water
- 5 Filtration
- 6 Decanter
- 7 Dewatering
- 8 Dewatered sludge

The modern art of brewing – benefitting people and nature



Innovative GEA technology which combines ecology and economy. Process-integrated environmental protection with decanters and separators in the international brewing industry.

Beer usually consists of just barley, hops, yeast and clean water. Nevertheless, its production is a complex biochemical process. In order to achieve top quality while safeguarding the environment, breweries use high-performance centrifugal separating technology systems from GEA.

Decanters and separators in breweries across the world have proven themselves time and again as future-proof solutions for wastewater treatment. They work continuously, clarifying and separating with extreme efficiency. They also require minimal energy, space and personnel and can be implemented with low investment costs.

Not all wastewater is the same

Wastewater in breweries essentially consists of two main streams. The first is residue from production such as yeast, fermentable sugar or diatomaceous earth. It can be fed back into the production process as a reusable material by separating solid and liquid substances. This reduces operating costs and increases yields.

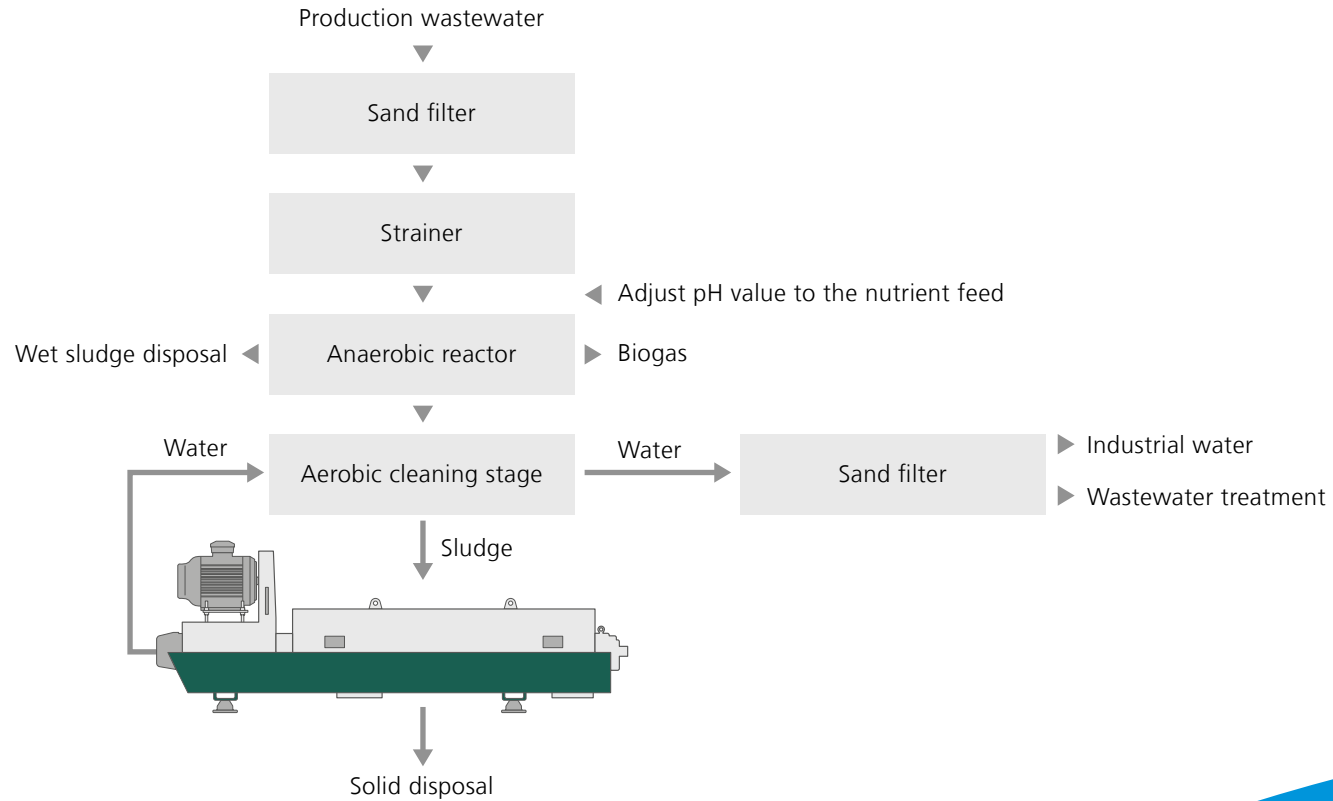
Cleaning away cleaning agents

The second main stream comes from cleaning processes in the fermentation and storage tanks as well as barrel and bottle rinsing. When processing this wastewater, decanters and separators make a key contribution to protecting the environment and reducing disposal costs.

Profitable to the very end

The use of a decanter is also profitable after biological treatment of wastewater in the operating wastewater treatment plant. The effect of decanters on the solids particles is four thousand times faster than sedimentation. The result is sludge which can be disposed of more easily and cost effectively with a reduced volume.

Water treatment in breweries



Environmental protection in dairy businesses – a cost-effective strategy



Wastewater costs are reduced by lowering wastewater quantities and freight. A key factor which gives dairy businesses a competitive edge.

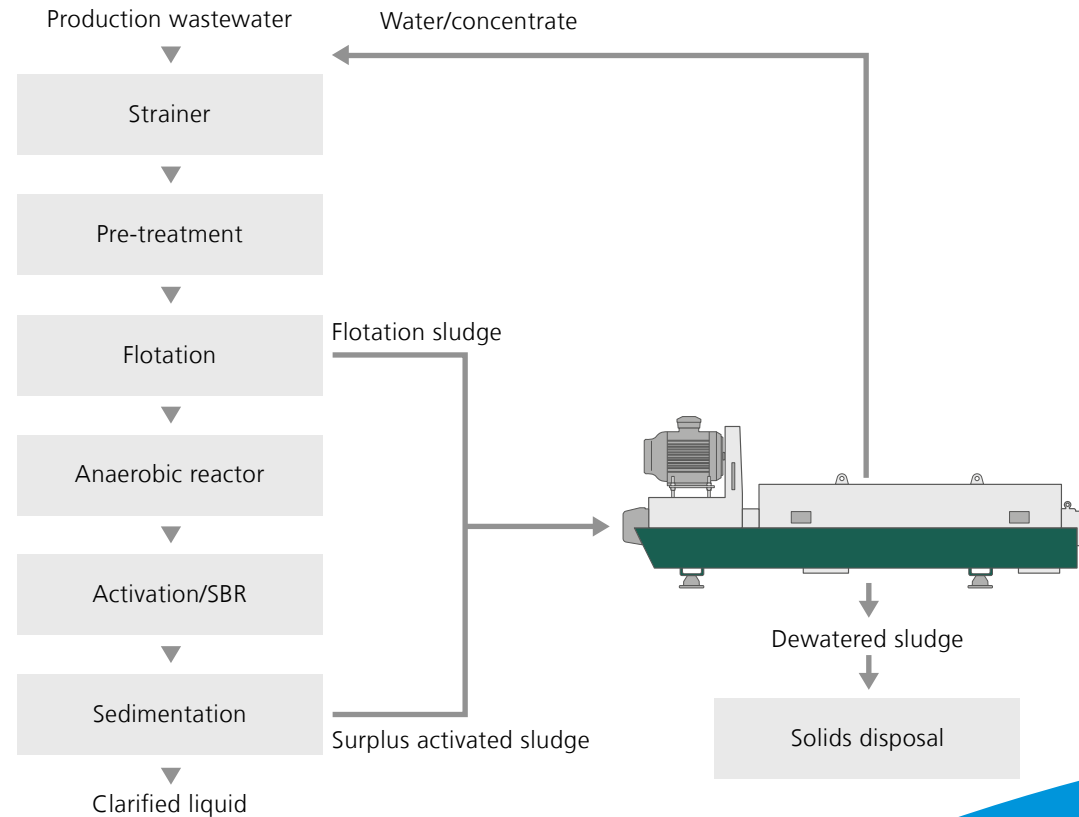
The average amount of wastewater used in dairies is around 1-3 liters per kilogram of milk. This results in significant wastewater disposal costs. Centrifugal separating technology from GEA opens up huge savings potential here by minimizing the use of fresh water and reducing the volume of residual sludge.

With milk preparation and the manufacture of milk products, hygiene is the top priority. This requires a lot of water for cleaning. Furthermore, there are significant quantities of wastewater with volatile milk constituents, fats and proteins. This is particularly the case during evaporation and spray drying. There are therefore two main streams of process wastewater: one in contact with the milk and one which has no direct contact with the product. Our decanters and separators offer the perfect solutions here, so you can save internal costs while increasing efficiency.

It's all in the milk ...

... but also in the way the subsequent products are processed. Recycling valuable constituents in the production process and reducing waste substances that can no longer be reused increase productivity, reduce operating costs and protect the environment. Calculations show that so-called direct dischargers, that is companies with their own wastewater treatment, run up to two-thirds more economically than the users of municipal wastewater treatment plants. Following anaerobic/aerobic biological cleaning of dairy wastewater, our decanter technology offers a globally proven process for thickening and dewatering residual sludge. This reduces disposal costs, increases your competitive edge and safeguards the environment.

Water treatment in dairies



State-of-the-art technology bears fruit



Fruit juice production: Retain “intrinsic value” and optimize value creation with centrifugal separation technology from GEA.

Obtain natural, “intrinsic value“ in fruit juice production. This starts with the peel, of oranges and lemons for example; whereby valuable elements like vitamins are turned into high-quality by-products. When cleaning pipes and storage tanks, valuable organic substances like fruit residue, which has a high sugar content, are left in the wash water. These need to be separated in the same way as chemical substances are in fruit cultivation, i.e. pest control, as well as residue in the production process. Large quantities of fresh water are required for this and to clean the fruit and bottles.

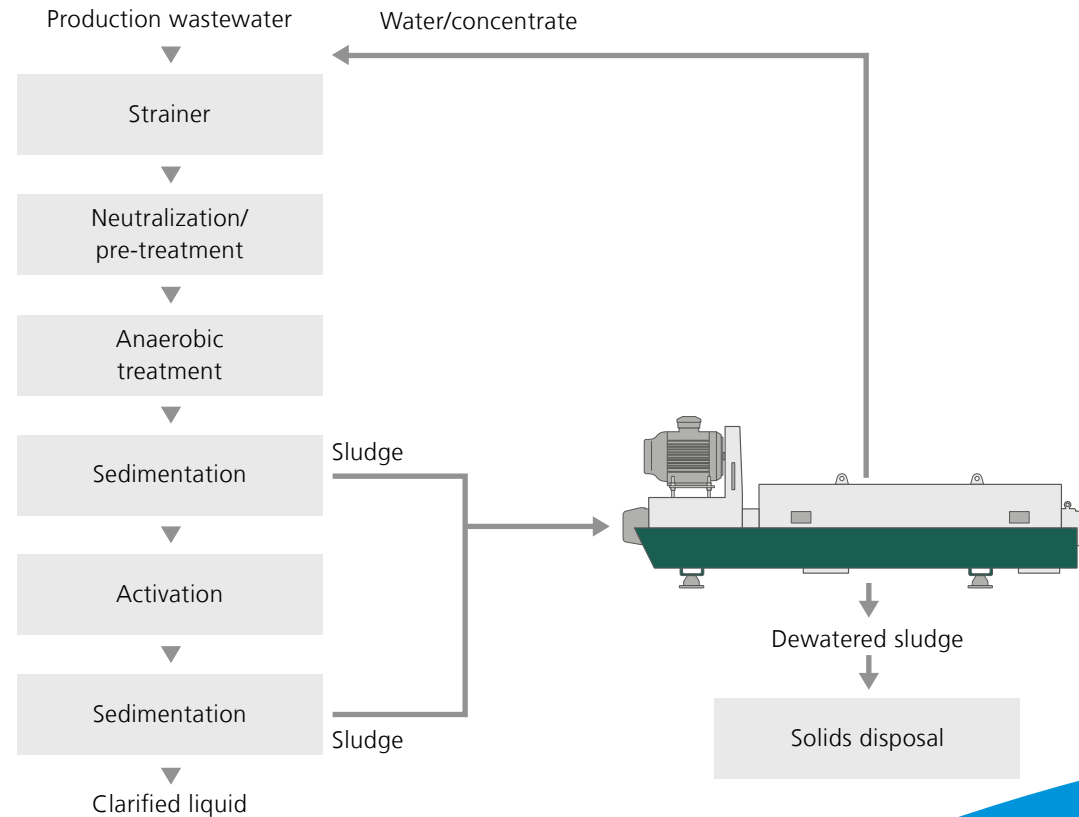
Optimize quality, yields and costs for the long term

The centrifugal separation technology from GEA offers fruit juice producers a range of benefits for process and wash water preparation. Thanks to their closed construction and high separating performance, the decanter centrifuges and separators ensure that everything is sent to where it belongs. Vitamins are returned to a high-concentrate juice, expensive transport costs are reduced, and clean water is sent back to the cleaning cycle or the sewer system in an environmentally friendly way.

Efficient wash water preparation by means of decanter

The mechanical separation of solids content is a highly efficient, cost-effective method for preparing wash water. Following filtration and biological pre-clarification in the aeration tanks, the thickened sewage sludge undergoes high-grade dewatering and volume reduction through GEA decanters. The solids that run off have a fluid consistency and can be removed in a cost-effective way, allowing the prepared water to be re-used for cleaning. This significantly reduces the use of fresh water. Value creation at its best!

Water treatment in fruit juice production



Turning old into new – PET recycling



The number of PET containers is increasing across the world. The recycling trend is also increasing the amount of wash water and cleaning lye in the recycling process.

Global plastic production is on a steep incline, and with it plastic waste. Around 12 million tons of plastic end up in the world's oceans, including countless bottles made from polyethylene terephthalate (PET). Sustainable use of plastic and optimizing the existing recycling process are therefore key tasks for businesses and governments.

GEA sludge Decanter pro: engineering for a better world

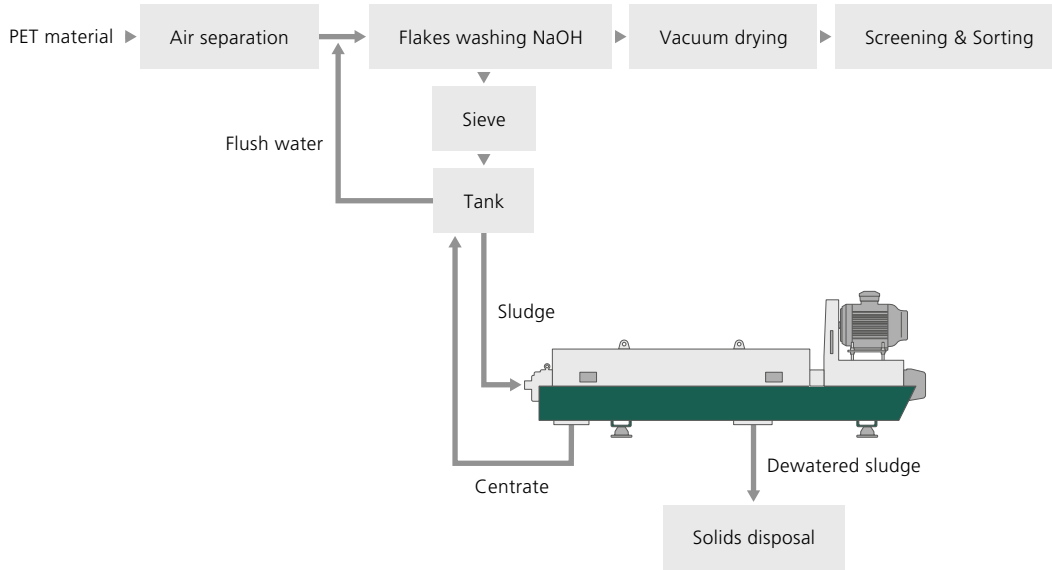
To support increased plastic recycling, GEA sludge Decanters pro provide an energy-efficient solution for removing contaminants from the wash and lye water in PET recycling plants. The centrifuges can accommodate both hot and cold water cleaning processes, which are based on decades of leading GEA expertise in wastewater treatment. The "old" PET containers are first shredded into pieces (or flakes) measuring two to three millimeters. These are then used as the basis for bottle-to-bottle recycling or to make "new" products such as sports clothing, office material and trunk lining. After this step, contaminants such as sand, solids, labels and glue residue are removed using hot and cold wash and lye water in two preparation processes. To avoid a constant exchange

of the pollutant liquids, they are cleaned at very high speeds by GEA sludge Decanters pro and reintroduced into the process cycle. This increases system availability, reduces production costs and conserves resources and the environment. The operator also benefits from highly corrosion-resistant stainless steel materials for all components that are in contact with the product, low space requirements, a closed system without aerosol emissions and continuous operation.

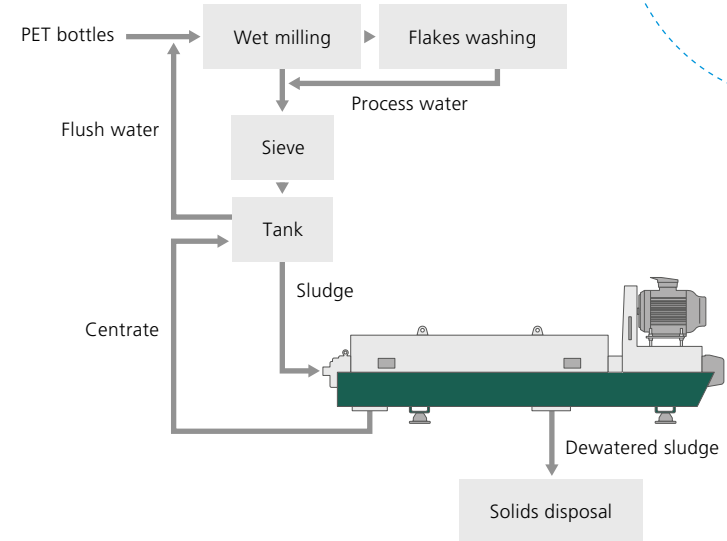
Extremely flexible application

The high level of standardization and modular, compact construction of the GEA sludge Decanters pro facilitate easy plug-and-play integration in established processes with little need for adaptations. This enables a fast delivery time. GEA offers the pro line in nine machine sizes, as well as a skid, mobile and retrofit solution. These are benefits enjoyed by many users in PET recycling plants around the world.

Resource-saving treatment of wash and lye water in PET recycling



Hot water cleaning process



Cold water cleaning process

A reduced footprint
for PET recycling and rPET

Numerous decanters have
already been installed by plant
manufacturers in turnkey PET
recycling plants all over the world ...

[Read more »»»](#)

Reducing high levels of water consumption



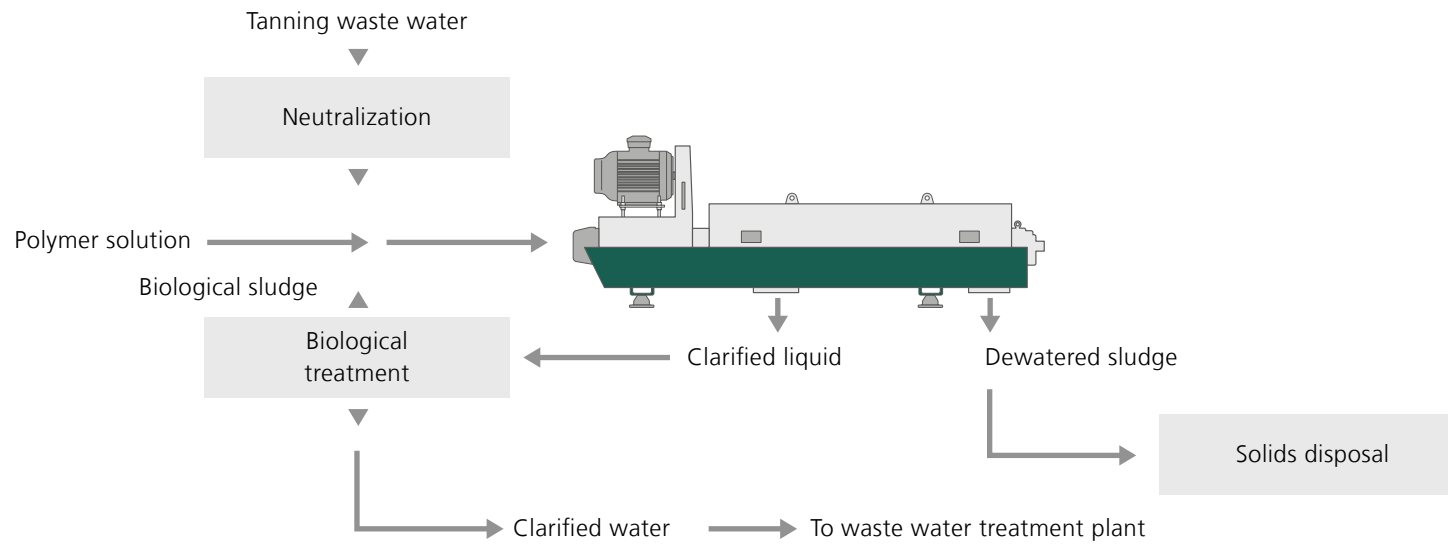
Prepare tannery wastewater in the best possible way with GEA decanters – thanks to high dewatering performance and minimal consumption of rinse water.

The tannery industry is one of the highest consumers of water in the world. Up to 60 cubic meters of water are required to produce high-quality leather from one ton of raw material: to transport the material during production, to dehair the skins and to soak the raw leather. The issues surrounding wastewater are especially pronounced and not just in the top production countries of Italy, Spain, China, India, South Korea, Brazil and the USA. This is because the specific production methods heavily pollute the volumes of wastewater with alkalis (pH 10), chemicals like sulphites and chromium, as well as a high proportion of organic matter. It is therefore not possible to feed it directly into municipal wastewater treatment plants without appropriate pre-treatment. Biochemical processing of wastewater is now a standard process in many companies. Decanters from GEA play an important role here.

Cost-saving, environmentally friendly wastewater treatment

The decanters separate all organic solids such as hair from the tannery wastewater, which has been offset and thickened with a polymer. The centrifuged solids can be composted and used in gardens or woodland areas. The liquid phase is then treated biologically. The resulting sludge is fed back into the dewatering process, while the wastewater can be sent on to municipal wastewater treatment plants. The decanters benefit the operators by combining dewatering performance with minimal consumption of rinse water. The closed system also reliably prevents emissions of aerosols which harm humans and the environment.

Water treatment in tanneries



Paint smart!



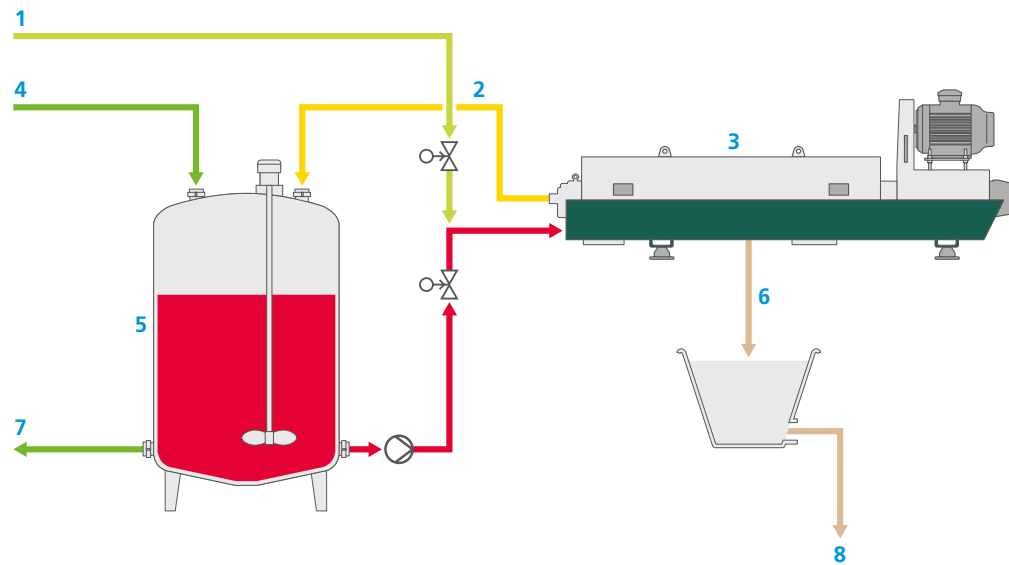
Paints bring colors to life – and into the wastewater. This is not a problem with GEA decanters, as paint residue is cleanly separated from the water, which can then be reused in the closed loop.

Paints are used in a number of different industries, e.g. for surface treatment and corrosion protection. There is generally no wastewater during production, as the systems are watertight. The situation is different for peripheral processes, for example cleaning packaging material, mixing tanks and dyestuff preparation tanks. The resulting paint sludge contains residue of dispersed acrylate and vinyl resins, dissolved cellulose derivatives with residues of pigments and filling agents, solvents, traces of acids or lyes as well as residues of preserving agents. This sludge has a water content of 80 to 95% and can be efficiently prepared. This is where GEA decanters come in: their high performance allows removal costs for paint sludge to be significantly reduced.

Optimize the cost of painting processes in an environmentally friendly way with decanters

The resulting sludge is collected in a storage tank and pumped to the decanters. The discharge of solids is removed or reused, and the clarified phase is fed back into the process. This reduces the costs of wastewater removal and freshwater consumption. This is also an advantage in areas where environmentally water-based paints are increasingly being used, such as the aerospace and automotive industries. The large clarification area in the decanter resulting from the high speed ensures excellent throughput capacities and improved separation while maintaining the same high dry matter content.

Water treatment in paint shops



- 1 Operating water
- 2 Clarified phase
- 3 Decanter
- 4 Degummed paint sludge
- 5 Buffer tank
- 6 Solids
- 7 Circuit water
- 8 Solids discharge

Paper can wait – the environment can't



Prepare wastewater sustainably in the paper industry using centrifugal separating technology, and benefit the environment and your pocket.

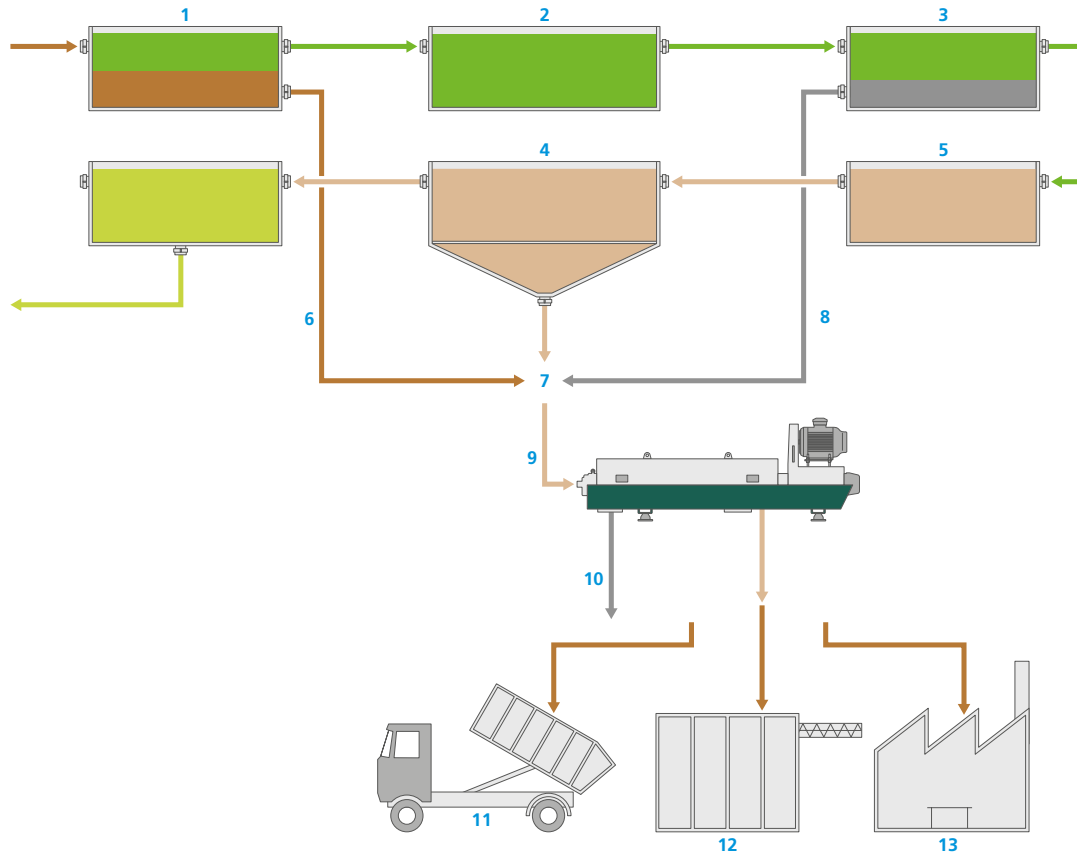
Thanks to its physical properties, water is essential for paper production, both in the preparation of natural raw materials such as timber, pulp and plant fibers, as well as in the recycling of wastepaper. The production of paper is one of the most water-intensive industrial processes there is. Depending on the desired paper quality, chemical substances are mixed in, e.g. whitening agent, colors or dust repellants, the residue of which contaminates the process wastewater. This applies in particular to "de-inking", the recycling of printed wastepaper. The resulting high wastewater quantities need to be prepared in a cost-saving and environmentally friendly way. Decanters from GEA can do this with maximum efficiency and reliability.

Closed material and resource cycles

Wastewater preparation with decanters also has numerous benefits for operators, which are clear to see. The centrifugal separating technology makes an important contribution to the separation of valuable, reusable substances, disposable solids and clear water, which can be fed back into the production cycle. This significantly reduces the use of fresh water, as well as the storage and disposal costs of the non-recyclable material, thanks to the high dry matter content that can be achieved.

A further benefit in terms of cost efficiency is that, while the used, valuable chemical substances are lost during processes without decanters, they can largely be retained when preparing with decanters, and used again in the production process. It's a win-win situation for the paper industry and the environment as you can see from the graphic opposite!

Water treatment in paper production



- 1 Pre-clarifying tank
- 2 High-load biology (1st stage)
- 3 Sedimentation
- 4 Post-clarification
- 5 Activation installation (2nd stage)
- 6 Primary sludge
- 7 Secondary sludge
- 8 Flotation sludge (various ink, paste sludge)
- 9 Capable of being dewatered individually and also together
- 10 Clarified phase
- 11 Landfill
- 12 Drying
- 13 Incineration

No risks or side effects



Wastewater preparation in the pharmaceutical industry that doesn't cause headaches.

Over the past 100 years, the average life expectancy of humans has almost doubled. One of the reasons for this is that many illnesses which seemed incurable decades ago can now be treated without medication. The pharmaceutical industry has made a significant contribution to this with their research and development. There is now also a huge range of medicine available worldwide.

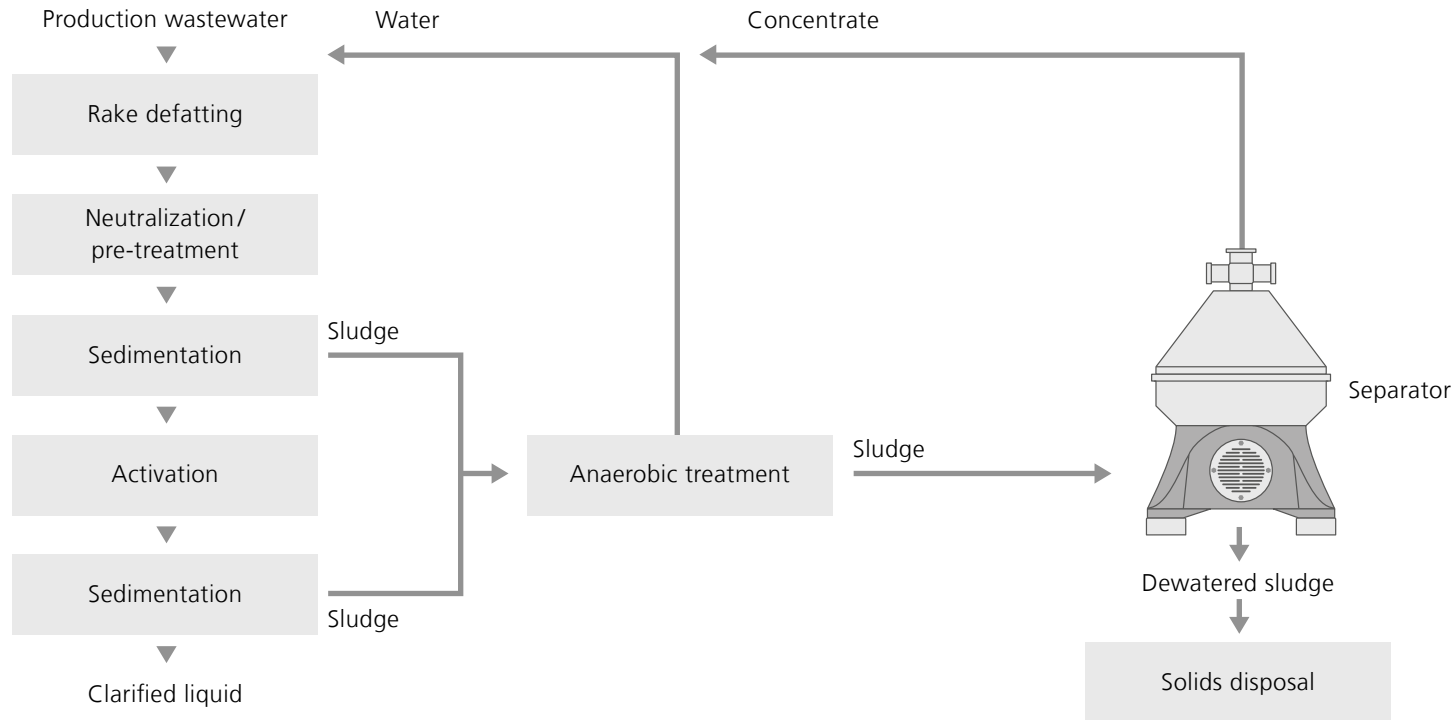
An even higher quantity of different chemical and biological raw materials is required to produce these medicines. The residue left by these substances in production wastewater is accordingly high, and it is not easy to separate it from the sludge. Where conventional clarification and sedimentation tanks are used, which take up a large space and require relatively long cleaning times, it is difficult to adhere to legal limit values in the wastewater. This is where GEA separators come in.

Clarification tank and separator – the perfect combination

The additional use of separators is the only way to reliably separate the polluting contents from this wastewater. Generally the content even falls below the specified limit values. The wastewater flows from the equalization tank to the biological treatment in ventilation basins. It then flows through pre-clarification tanks and into an equalization tank which serves as a sample. The GEA separators then polish the wastewater.

Conventional membrane filtration systems are also tested by pharmaceuticals for comparison purposes. One of the main benefits of separators is that there are no "blockage phenomena", ensuring a reliable process. This is a real bonus that is valued by operators for cost-efficient wastewater preparation.

Water treatment in the pharmaceutical industry





GEA manure Decanter for agriculture

Specific solutions for the efficient, economical treatment of slurry and fermentation residue meets the strictest requirements for ground water and environmental protection and minimizes disposal, storage and transport costs.



Nature knows no waste



Twofold benefit from decanters: energy from biogas and high-quality fertilizer.

Intelligent recycling instead of just disposing of waste forms the current basis for modern environmental protection and for business activity too. Nature is a good role model here, as it knows no waste.

Anaerobic fermentation

The mid-90s saw the establishment of the innovative technology of anaerobic organic waste fermentation, which has proven itself ever since in terms of both environmental protection and conservation of resources. The energy-efficiency and recycling-related benefits of this process are clear for the user.

Wet fermentation

After carefully cleaning all foreign material such as plastic, metal and textiles, the collected organic waste is crushed, saturated with water and sanitized. After the sand is separated and a further defibration process is performed, this mixture of organic waste and water can ferment anaerobically in the digestion tower. A valuable side effect of fermentation is the emergence of biogas, which can be converted into electricity after cleaning. This is an environmentally friendly and pioneering way to generate energy and can play a key role in sustainable energy policy.

Decanters produce high-quality compost

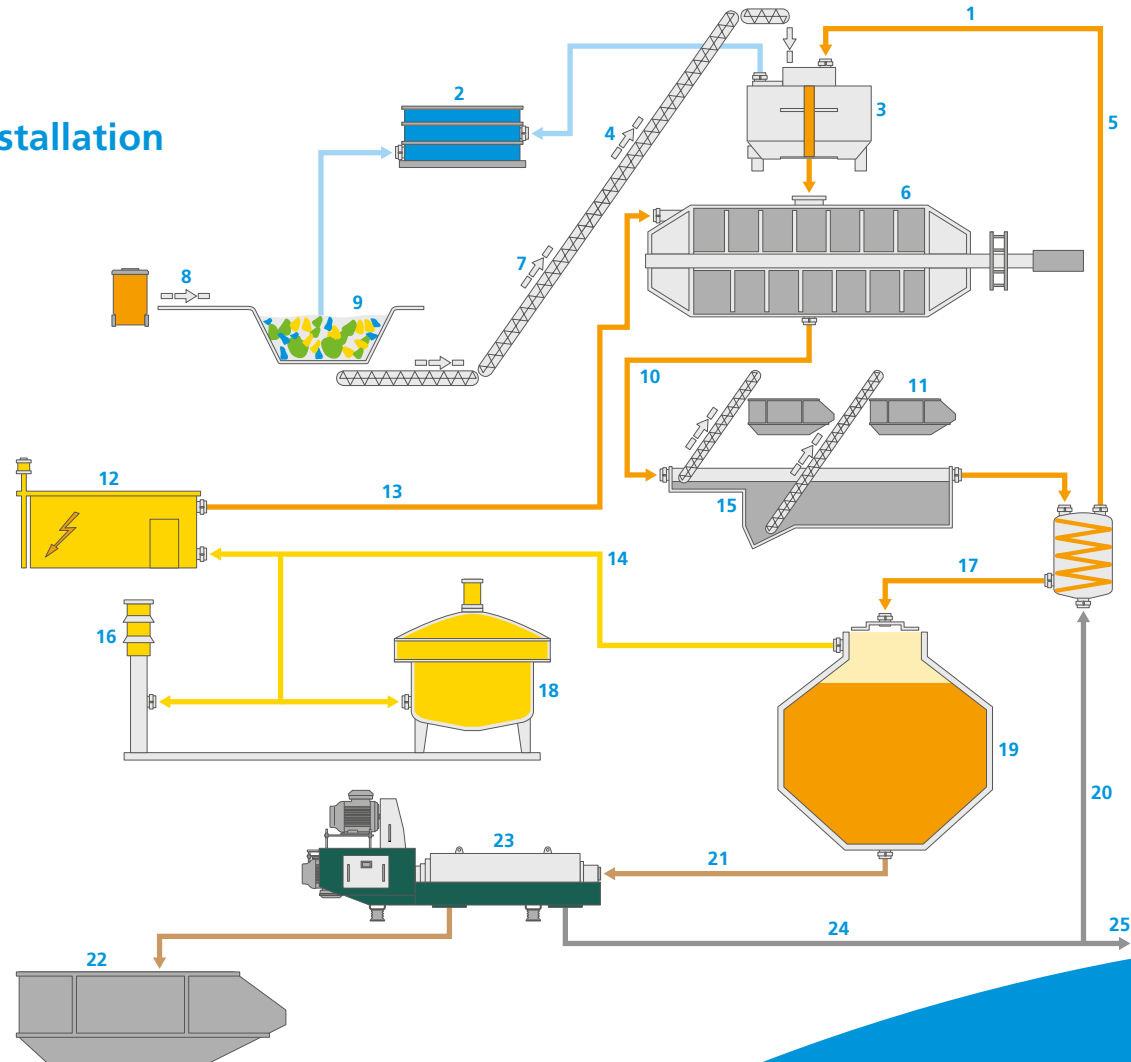
During the dewatering of the digested biomass from the fermenter, GEA decanters separate solids particles that can be centrifuged and dewater them into a fluid, dry consistency. The solids that run off from the decanter with their organic components form a high-quality, hygienically safe fertilizer. The centrifuged material flows back into the fermentation process or is sent for further treatment.

The benefits of centrifugal separating technology from GEA at a glance

- High separation performance and excellent centrifuged material quality
- High dry substance value in compostable solids
- Recirculation of the centrifuged material for mashing
- Reduced logistics and output costs
- Closed material flows

Example of a wet fermentation installation

- 1 Quenching water
- 2 Biofilter
- 3 Break down and dissolve
- 4 Exhaust air
- 5 Heat recovery
- 6 Paddle mixer
- 7 Conveyor belt for biowaste
- 8 Delivery of biowaste
- 9 Bunker
- 10 Light substances
- 11 Sand
- 12 Combined heating/power generating plant
- 13 Heating
- 14 Biogas
- 15 Sand trap
- 16 Gas flame (option)
- 17 Raw suspension
- 18 Gas tank
- 19 Bio-reactor
- 20 Partial recycling
- 21 Fermentation suspension
- 22 Quality compost
- 23 Dewatering/decanter
- 24 Centrate
- 25 To wastewater treatment



Specific separation of animal nutrients – stationary or mobile



Process slurry with GEA manure Decanters: recover nutrients and feed them back into an efficient cycle.

In modern agriculture, slurry from livestock farming is a valuable natural fertilizer, provided that it is used without high nitrate and phosphate contamination of the ground and surface water. Intensive livestock farming is at odds with a lack of slurry audit areas here. To tackle this problem, the experts at GEA have developed a treatment concept which pays off for agricultural companies. The slurry and associated excess nutrients are prepared with decanters in such a way that the subsequent products can be used efficiently and economically.

Efficiently reduce phosphorus and nitrogen content

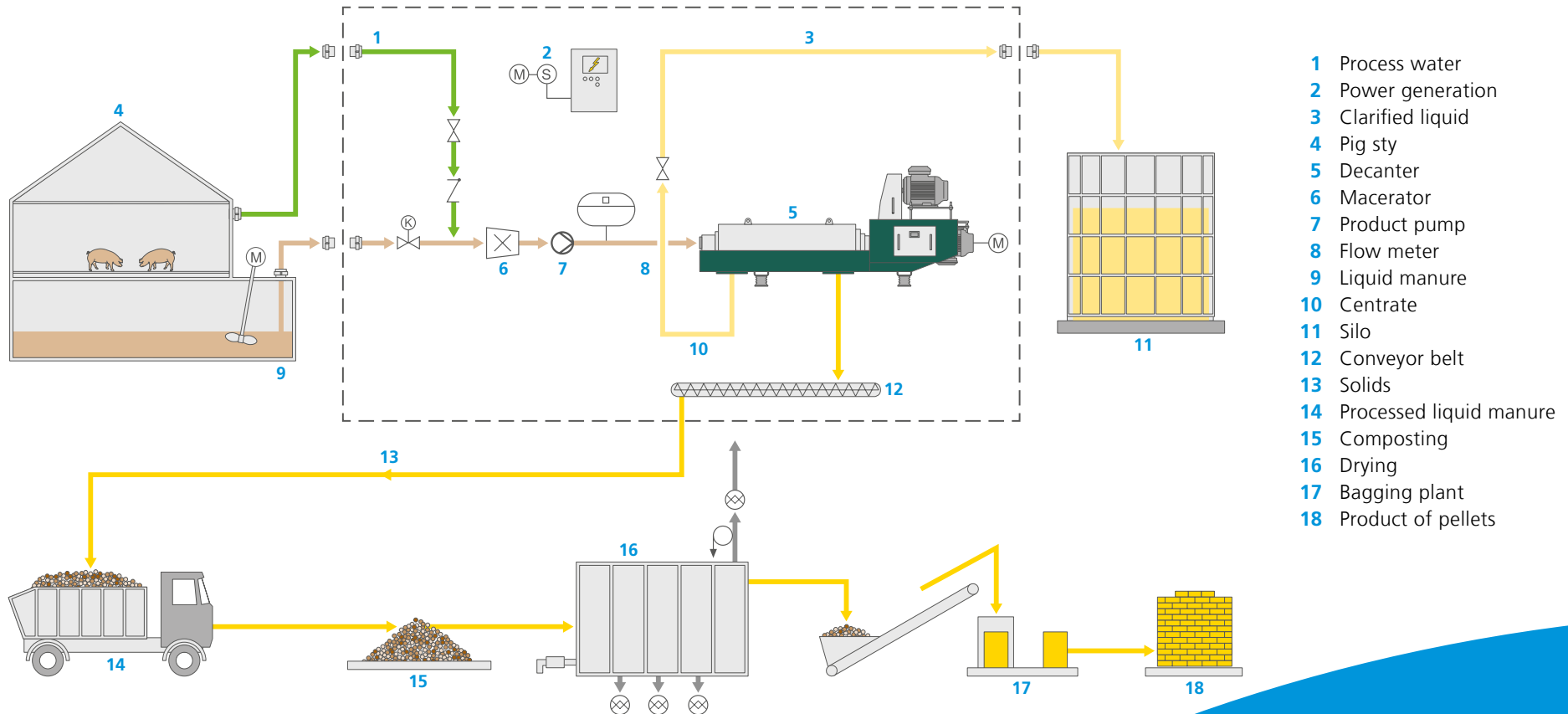
Environmentally friendly use of natural fertilizer is only possible after its phosphate and nitrogen content is reduced. The mechanical separation technology of the GEA manure Decanter takes on an

important task here. The phosphate content is reduced by 70-90% and the nitrogen content by 30-35%. Solids particles that can be centrifuged are dewatered to a fluid consistency and can be further processed to form sanitized fertilizer.

Moving from farm to farm

GEA offers mobile decanter systems with a plug-and-play design which can be quickly transported from farm to farm and are ready to use almost instantly. All the necessary components such as pumps, conveyor technology and not least a power supply from a diesel generator make the mobile decanters completely self-sufficient.

Processing of slurry





We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

“Engineering for a better world“ is the driving and energizing principle connecting GEA’s workforce. As one of the largest systems suppliers, GEA makes an important contribution to a sustainable future with its solutions and services, particularly in the food, beverage and pharmaceutical sectors. Across the globe, GEA’s plants, processes and components contribute significantly to the reduction of CO₂ emissions, plastic use as well as food waste in production.

GEA is listed on the German MDAX and the STOXX® Europe 600 Index and also included in the DAX 50 ESG and MSCI Global Sustainability indexes.

GEA Germany

GEA Westfalia Separator Group GmbH
Werner-Habig-Straße 1
59302 Oelde, Germany

Tel +49 2522 77-0
Fax +49 2522 77-2950
gea.com/germany