Centrifuges from GEA Westfalia Separator for Industrial Minerals

Processing of calcium carbonate, kaolin and titanium dioxide
Reliable Processes

No company is more proficient in centrifugal separation technology than GEA Westfalia Separator. The comprehensive know-how in the design, production and process integration of separators and decanters is essential for optimum results as far as the processing of industrial minerals is concerned.

GEA Westfalia Separator Group took advantage of the natural principle of centrifugal force by mechanical means as early as in 1893. Since building the first centrifuge, the company has developed into a global technology leader which today masters more than 3000 process engineering applications. The corporate partners in the field of industrial minerals benefit from this comprehensive know-how.

Whether processing calcium carbonate, kaolin or titanium dioxide: the centrifuges of GEA Westfalia Separator Group for the classification, thickening and dewatering of pigments set standards for performance, service life as well as for economic and environmentally sound operation.

Plan your success

Thanks to the many years of experience and continuous investments in research and development, the company offers its customers a crucial technological edge. GEA Westfalia Separator Group’s Central Process Engineering facility is available for complex trials in order to create a reliable decision-making basis for investments.

From initial advice, basic and detailed engineering right through to the commissioning of the installations, GEA Westfalia Separator Group offers a perfect combination of process knowledge, sound knowledge in plant construction, first-class products and technologies. The result is reliable process management with maximum availability of the centrifuges which are used.

Whatever objectives are relevant: the solutions from GEA Westfalia Separator Group mean that success can be planned. Agreed performances are attained reliably and permanently.

Centrifuges from GEA Westfalia Separator Group concentrate customer benefit:

- Optimize process results
- Reduce production costs permanently
- Maximize production capacities
- Protect people and environment
Mineral pigments are used in order to stabilize ceramics, improve the characteristics of paper and produce paints or plastics. GEA Westfalia Separator Group has developed tailor-made centrifuges for classification, thickening and dewatering of calcium carbonate, kaolin and titanium dioxide.
Calcium Carbonate – Classification and Dewatering of GCC and PCC

Decanters from GEA Westfalia Separator are used in GCC and PCC processes. The recovery of high-purity particles extending down to the nano range meets the industry’s highest quality standards.

Calcium carbonate is used in a broad spectrum of applications. Besides its use as a filler for paints and plastics, it plays an important role as a coater in the paper industry. CaCO₃ from marble is the ideal inorganic pigment to produce bright white, multi-coated paper in photo print quality.

Intelligent treatment techniques are required for classifying, sorting and dewatering calcium carbonate. The product quality and market price are determined by the particle size distribution and purity. The decisive factor is the concentration of the valuable particles with a size < 2 µm and a dense particle distribution. A higher process flexibility must also be assured to recover different quality grades and to boost the recovered yield.

A fundamental differentiation is made between ground calcium carbonate (GCC) and precipitated calcium carbonate. In the traditional GCC method, blocks of marble are ground before being classified and dewatered to the specifications of the intended application. In the innovative production of PCC, the process configuration is exactly the opposite. Individual crystals are stimulated to grow in a reactor by adding calcium oxide and are then dewatered.

GEA Westfalia Separator Group supports both processes with customized and individually configured process lines.

**Very precise classification cut**

The new decanter generation is specifically designed for the recovery of particles in the micro and nanosize range. The continuous processing mode supports solid-liquid separation and classification by different particle sizes and liquid densities. The very precise classification cut enables the particle size distribution to be adjusted so that the quality specifications are always spot-on. Adding on a second classification stage has the advantage that existing product losses can be transformed into the desired higher quality without excessive expenditure.

Dewatering of the superfine particles to a dry substance content in excess of 70 percent subsequently ensures controlled, stable solids concentrations. Clarification additionally minimizes the contaminants.

Whether GCC or PCC: the result is in either case a highly pure, pasty slurry which fulfils all the demands of the paper manufacturer.

**At a glance:**

- Continuous process
- Support of GCC and PCC recovery
- High product purity
- High yields, less product losses
- Dry substance contents of more than 70 percent
Recovery of ground calcium carbonate

CaCO₃ raw product
Coarse milling
Washing station
Fine milling
Flotation
Hydrocyclone
Milling
Wet milling
Classification
Dewatering
Storage tanks

Production of precipitated calcium carbonate

Crushed limestone
Calcination
Hydration
Precipitation
Precipitated calcium carbonate
Dewatering
Storage tanks
Packaging
Filler pigment
Milling
Coating pigment
Kaolin and Titanium Dioxide –
More Product of Higher Quality

Kaolin, also known as china clay, is a pigment recovered from kaolinite, a weathering product of feldspar. It is valued as a filler and whitener in many branches of industry. Particularly high-grade kaolin is in high demand by the paper industry because it is ideal as a luminous filler and coating material for high-quality paper.

In the production of kaolin, brightness, opacity, purity and gloss define the pigment quality. These parameters are essentially determined by the particle size distribution. Particles smaller than 0.2 µm are irrelevant in the production of white colour because they no longer diffract the light. Particles larger than 2 µm, by contrast, negatively impact the whiteness. Coarser particles with a diameter above 20 µm in particular must be as few as possible to produce a good paper quality.

**Optimum particle size distribution**

High-performance decanters from GEA Westfalia Separator Group are used in the process shown. Thanks to their accurate classification cut, the particle size distribution can be configured in such a way that the user gets the desired quality with low product losses. In the case of plants which produce many thousands of tonnes yearly, a yield which is just a few percent higher and a higher degree of whiteness make themselves significantly felt.

With a newly developed recovery process, GEA Westfalia Separator Group has also succeeded in substantially reducing the losses of the 2 µm fractions. The already minimal product loss can be transformed into the desired higher quality without difficulty by adding on a second classification stage. At the same time, the manufacturer has the possibility to produce two different pigment qualities with the first and second stage.
Kaolin process flow sheet
Titanium oxide in the chloride process
Titanium dioxide has the highest opacity of the entire range of white pigments plus a very good whitening power. These properties not only make it attractive for the production of paper. It is also of significant interest for paints and lacquers, as sun blockers in suntan lotions, as a constituent of solar cells and ceramic capacitors or as nano particles for self-cleaning surfaces.

The chloride process has established itself worldwide for the recovery of titanium dioxide. This process has the advantage that the chlorine remains in the process circuit to a large extent and no environmentally hazardous dilute acid is produced. GEA Westfalia Separator Group supports this process through the integration of a special nozzle separator.

The opacity as well as the optimum consistency and brilliance of the titanium dioxide heavily depends on the size of the particles. The use of centrifuges from GEA Westfalia Separator Group makes it possible to classify the titanium dioxide so that there is a particularly large number of superfine particles in the quality-enhancing size of approx. 0.2 to 1 µm. Rotary brush strainers are installed upstream of the nozzle separators to remove the coarser fractions and hence protect the nozzles from possible blockage.

All advantages at a glance:
• Premium product quality
• Higher yield – minimal product losses
• Continuous process
• High availability of the centrifuges used
• Both separators and decanters in the product line
GEA Westfalia Separator Group supports its customers in industrial minerals from the initial product test in the decision-making process right through to 24-hour service after the centrifuges have been installed. Together with Central Process Engineering in Oelde, product tests are carried out to determine how the product can be separated most effectively and what materials which come into contact with product have to be used. In addition, initial recommendations are also provided with regard to the design of the process, and cost estimates are made. The optimum process design is developed by the process experts in close cooperation with the customer.

Thus, GEA Westfalia Separator Group project management offers all services from a single source – from the individual installation layout right through to the commissioning of the installations and comprehensive service options. The involvement of all parties and resources means that it is always possible for customer requirements to be met, and in many cases even exceeded, in terms of cost and production efficiency.

**GEA Westfalia Separator caretechnology goes further**

The intensive cooperation with the customers works in accordance with the philosophy of caretechnology. The concept combines the top separating technology services and the innovative ability of the company with comprehensive responsibility for the security of investments, products and processes.

GEA Westfalia Separator caretechnology stands not only for a high yield of the employed raw materials; it also stands for reliable process management which makes efficient use of resources and thus also for the protection of people and environment. Maximum availability including plannable maintenance intervals for the separating technology installations throughout their entire life is the daily objective of GEA Westfalia Separator Group.

**These are the benefits...**

- All services from a single source
- Customer- and application-oriented engineering
- **Support for process development, design**ing the process accessories and the installation layout by way of reliable scale-up
- **Reliable compliance with all agreed specifications**, budgets and delivery deadlines
- **Complete assembly and testing of the installations** in the ISO 9001 certified production facility
- **On-site assembly of certain installation types** is also possible
- Service network operating throughout the world

... which provide every customer with the necessary security.
GEA Westfalia Separator care technology combines top separating technology performance with comprehensive responsibility for reliable process management.
Classifying Decanters –
Precise Right Down to the Nano Range

Classifying decanters from GEA Westfalia Separator convince through optimal process control in the micro and nanosize range.

Decanters from GEA Westfalia Separator Group used in the mineral processing sector are horizontal, solids-oriented solid-wall scroll centrifuges.

In the version as classifying decanter, they take on the job of continuously processing the slurry so that the particle size distribution and purity of the product conform exactly to the specifications.

The innovative technology of the classifying decanter enables an accurate classification cut. This means optimum process control for the recovery of particles in the micro and nanosize range. The particle size distribution can be both displaced and altered. Adjustment to the smallest grain sizes is also possible without difficulty.

Valuable substances are recovered, undesirable superfine particles and impurities are separated reliably.

Depending on capacity and requirement profile, different sizes and drive concepts are available. In addition, the classifying decanters convince through robustness, a long life cycle, high torques, user friendliness, low energy consumption and low maintenance expenditure.

At a glance:
- Recovery of valuable substances
- Separation of diverse particles
- Separation of superfine particles and impurities
- Displacement of the particle size distribution
- Altering the particle size distribution
- Adjustment to smallest grain sizes
Dewatering Decanters for Highest Dry Substance

Dewatering decanters from GEA Westfalia Separator ensure maximum solids concentrations.

Like the classifying decanters, the dewatering decanters from GEA Westfalia Separator Group also operate in continuous processing mode. These solid-wall scroll centrifuges are used in the mineral processing sector for dewatering suspensions.

Decanters operating at high speeds and high torques are required for dewatering fine particles. At the same time, the large product streams require large diameters. The centrifuges from GEA Westfalia Separator Group meet these demands in every respect.

Due to their very high speeds, the dewatering decanters are capable of producing end products with an extremely high dry substance. Variable drives with torque-dependent differential speed regulation ensure constant solid concentrations, even with fluctuating feed concentrations.

Their robustness and wear resistance make the dewatering decanters extremely reliable in long-term operation too. The decisive advantages of the centrifugal system as opposed to filter press techniques are the closed and continuous processing and the avoidance of the laborious filter handling. Compared with evaporator technology, the energy consumption is significantly lower.

At a glance:
- Maximum solids concentration
- High product quality
- High availability
- Optimized drive systems
- A wide range of decanters specially designed for the optimum dewatering of inorganic pigments.
Zero-point drive
The zero-point drives are part of the standard program. They feature a very simple design and are therefore cheap to purchase and operate. Zero-point drives are used when the solids volume is constant, the solids are easy to convey and the requirements regarding the residual water content of the solids are not very stringent, in other words, bowl and differential speed regulating facilities are not necessary. This is because alteration of the differential speed can only be achieved by changing the gear transmission or the bowl speed.

Exchangeable pulley drive
The exchangeable pulley drives are also part of the standard program. They are also very cheap to purchase and feature a simple design. The input shaft of the drive is set in motion by the main motor via a second belt drive. This generates the differential speed as a function of bowl speed and gear transmission. This can be easily changed by replacing the belt pulleys.

2-gear drive
The advantage of the 2-gear drive which has been developed and patented by GEA Westfalia Separator Group is the facility for regulating the scroll drive. The differential speed is adapted automatically and extremely precisely as a function of the scroll torque – and thus as a function of the solids content in the bowl. Accordingly, the solids are discharged from the bowl with a constant concentration and in an extremely dry state. 2-gear drives are used whenever the volume of solids is not constant, when the solids are difficult to convey and when very high requirements are applicable with regard to the residual water content of the solids.

Hydro-drive
The hydro-drive works in a way which is similar to that of the differential gear drive. The difference is to be seen in the design. Instead of the mechanical gear, a rotating hydromotor is installed; this is supplied with hydraulic regulation by a pump unit. Because the differential speed is proportionate to the conveyed quantity of oil, automatic regulation can be provided without any problem.
Innovative Drive Concepts for Decanters

Flexible process management with simultaneous maximum availability are essential requirements for modern drive concepts.

The variety of process engineering applications in which decanters from GEA Westfalia Separator Group are used requires different drive concepts. This is the only way to meet the corresponding product requirements in an optimum manner. The product line therefore includes drive systems with and without the possibility of simple regulation of the differential speed. The requirements for the machine and process but also customer wishes determine what type of drive is used.

**2-motor drive**

The 2-motor drives enable the differential speed to be regulated cost-effectively under good operating conditions; wide regulating ranges are possible. The secondary motor sets the input shaft of the gear in motion and generates the differential speed as a function of bowl speed and gear transmission. The differential speed can easily be regulated by changing the motor speed. 2-motor drives are used whenever solid volumes fluctuate significantly, when solids are conveyed under difficult conditions and when particularly stringent requirements are applicable with regard to residual water content.

In the case of decanters which are used in the field of industrial minerals, flexible and precise regulation of the differential speed as well as a wide speed control range are particularly important. This is the only way to achieve extremely high solid concentrations and the optimum classification cut thus high separating efficiency. The 2-motor drive and the differential gear drive have therefore become established in practice.

**Differential gear drive**

The differential gear drive is recommended whenever it is necessary to automatically regulate the scroll speed in addition to regulating the bowl speed. This can be achieved by means of two gears. The secondary motor drives the central input shaft and generates the differential speed proportionally to its own speed. A second input shaft without any speed is connected to the housing. This means that the differential speed is not dependent on the bowl speed. Differential gear drives are used primarily in the lower range of the differential speeds.
Decanter Wear Protection – No Chance for Abrasion and Corrosion

GEA Westfalia Separator uses highly resistant duplex steel and special armour-plating for all parts which come into contact with product.

Crud treatment and recovery of organic components expose decanters to extreme material strain. The low pH value of the process (pH 2) and high operating temperature in conjunction with a range of high chloride concentrations result in corrosion. The only way to tackle this problem is to use an extremely high quality material. GEA Westfalia Separator Group therefore uses highly resistant duplex or super-duplex stainless steels for manufacturing all components of the decanter which come into contact with product.

This material is not affected by pitting, and also features higher abrasion protection than stainless steel which is normally used. In permanent contact with abrasive particles in metallurgy, this wear protection is an essential advantage.

In addition, all places at which increased levels of wear can be expected have to be provided with special armour-plating in order to ensure permanent operation of the decanter. The most suitable form of armour-plating according to the specific application is defined in close cooperation with the customer.

One possible solution is spray cladding, in which carbide is for instance welded on to the vane of the scroll or areas in the distributor. The advantage of this solution is that the protecting material combines with the base material in the welding process.

GEA Westfalia Separator Group also offers the possibility of using tiles instead of or in addition to carbide plating. Tiles are generally used in conjunction with highly abrasive products. GEA Westfalia Separator Group also has the know-how for cladding certain areas with ceramics in order to provide special protection.

Depending on specific requirements, GEA Westfalia Separator Group offers wear and corrosion protection in the form of:

- Carbide cladding
- Tiles
- Ceramics
- Use of high-quality steels
- Rubber linings
- Coatings

GEA Westfalia Separator Group tackles problems posed by abrasive particles with special armourplating for all decanter components which are at risk.
Decanters from GEA Westfalia Separator –
Convincing Right Through to the Smallest Detail

<table>
<thead>
<tr>
<th>Machine portfolio</th>
<th>&gt;&gt; GEA Westfalia Separator Group as a complete-range provider for a range of 600 – 350,000 l/h</th>
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</thead>
<tbody>
<tr>
<td>Special materials</td>
<td>&gt;&gt; Parts which come into contact with product can be made of specific application-related materials, thus ensuring optimum resistance and product-neutral properties</td>
</tr>
<tr>
<td>GEA Westfalia Separator varipond®</td>
<td>&gt;&gt; Automatic system for infinitely variable adjustment of the liquid level while the machine is running in order to adjust for product fluctuations in the feed</td>
</tr>
<tr>
<td>Separating zone adjustment during operation</td>
<td>&gt;&gt; Assures maximum dry substance values and separating efficiency in conjunction with different feed conditions, resulting in lower power consumption</td>
</tr>
<tr>
<td>Explosion-protected and gas- and pressure tight designs available</td>
<td>&gt;&gt; Assures optimum conveyance of highly viscous liquids – enhances conveyance efficiency</td>
</tr>
<tr>
<td>Six scroll drive versions</td>
<td>&gt;&gt; Intelligent self-control</td>
</tr>
<tr>
<td>Adjustable bowl speeds</td>
<td>&gt;&gt; Automatic adjustment of bowl speed to changing process conditions</td>
</tr>
<tr>
<td>Wear protection</td>
<td>&gt;&gt; Better availability, lower maintenance costs</td>
</tr>
<tr>
<td>Rotor concept</td>
<td>&gt;&gt; Maximum speed, g-forces and g-volumes permit maximum throughputs and clarifying efficiency</td>
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Nozzle-Type Separators for Efficient Thickening and Classification

Continuously operating nozzle-type separators from GEA Westfalia Separator are the first choice for efficient processing of superfine solids.

Nozzle-type separators discharge concentrated suspensions continuously via nozzles which are installed on the periphery of the bowl. The product flows via the feed into the bowl, where it is separated into concentrate (underflow) and centrate (overflow). The disk stack which is installed in the bowl increases the equivalent clarification area and thus the performance of the separator.

The size of the bowl diameter and thus the number of nozzles are linked proportionately to the potential concentration of the concentrate. The concentration increases in conjunction with increasing throughput, high initial concentration of the product, declining solids content in the discharge, small nozzle diameter and a low bowl speed.

The task is to achieve a balance between these factors and the equivalent clarification area as a standard measure for the clarifying performance of the bowl, in order to make sure that the remaining solid content in the concentrate permanently meets the customer’s requirements.

With the online analysis facility which is offered by GEA Westfalia Separator Group and which is based on measurement of the concentration of the product upstream and downstream of the nozzle-type separator, it is possible to adjust the clarifying performance of the centrifuge very precisely. The figures resulting from the concentration measurements are used for automatically carrying out adjustments to the feed capacity and the concentrate recycling. This achieves constant concentration of the discharged suspension. Fluctuations in the process results can thus be reliably excluded.

At a glance:
- All operating sizes covered
- Continuous method of operation
- With concentrate recycling before the nozzle in order to increase the concentration
- Sophisticated online analysis for stable process conditions
- Direct drive for optimum energy efficiency and low service costs
Different drive concepts are also available for the separators. Two drive concepts are in the programme: flat-belt and direct drive.

**Flat-belt drive**
In this solution, the motor power is transferred to the spindle by means of an antistatic flat-belt. Oil circulation lubrication ensures that bearings are continuously lubricated. This also means that the separator does not have to be shut down for an oil change. Compared to the gear drive, which is still used in older models, the motor power is transferred with up to 10 percent lower power losses. The belt itself can be replaced quickly and in a service-friendly manner without the bowl or motor having to be dismantled beforehand.

**Direct drive system**
The direct drive is an example of intelligent simplification in separating technology. Wherever the upper limit for gear loads has been reached or belt drives are undesirable, our separators with direct drive permit virtually loss-free power transmission. This boost in performance simultaneously reduces the costs of energy, wear, maintenance and space. The required power is transmitted directly to the bowl spindle by a three-phase AC motor with frequency converter control via a torsionally elastic clutch. The spindle assembly is likewise supported by rubber-metal cushions. This makes possible low-vibration running at high bowl speeds.

**At a glance:**
- Extremely space-saving design
- Avoidance of housing deformation
- High performance input
- Low maintenance requirement
Excessively large solid particles can clog the nozzles of the separators. This is reliably avoided by installing a rotary brush strainer from GEA Westfalia Separator Group upstream.

The product is fed into the strainer insert through the inlet, and flows through the strainer in the chamber to the discharge. The coarse solids are retained and scraped off the interior of the strainer by the rotating brushes. They fall into the conical base, from which they are discharged manually from time to time or automatically through the solids discharge.

**Special coating against abrasion**

In order to ensure that maximum performances are permanently achieved, the nozzle-type separators are also equipped with a special wear protection against abrasion. This solution comprises coated wear plates as well as a coating on the distributor bottom and the bowl bottom.

**At a glance:**
- Upstream rotary brush strainers prevent clogging of the nozzles
- Reliable protection against abrasion
- Maximum separation performance in the overall process
- Maximum maintenance intervals
## Separators from GEA Westfalia Separator – Convincing Right Through to the Smallest Detail

<table>
<thead>
<tr>
<th>Machine portfolio</th>
<th>&gt;&gt; GEA Westfalia Separator Group supplies a complete machine portfolio (capacity up to 500,000 l/h) with compatible hydraulic performance parameters/performance reserves – the right separator for every customer requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modular total concept</td>
<td>&gt;&gt; Customized solutions and delivery as required by customers</td>
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</tbody>
</table>
| Operating the separators | >> Personnel-friendly operating of the separators and, if required, 100 percent remote-monitored operation possible, thus enhancing operational reliability and availability  
>> Combination of maximum robust nature and reliability  
>> Low water consumption as no cooling necessary for the drive and the slide ring packings |
| Special materials | >> All product-contact components, hood, solids chute and frame coating can be supplied in application-specific materials, resulting in optimum resistance and product neutrality |
| Discharge and feed design | >> Feed design can be adapted to product requirements  
>> No product mixing/contamination possible in the discharge line. Product is discharged foam-free and under pressure, if necessary up to 10 bar – no discharge pumps necessary, savings in terms of plant units |
| Flat-belt drive/direct drive | >> Drives are low-wear and service-friendly. The drive’s belt does not have to be subsequently tightened. Minimum bearing load (adjustment-free) assures longer service lives of bearings  
>> Flat-belt drive transmits the drive force with extremely low losses, and is up to 10 percent more effective compared with a gear drive – with the benefit of minimum power consumption  
>> Simple and service-friendly belt change without bowl and drive assembly  
>> Use of lubricants approved for food applications  
>> Available in explosion-protected design and ATEX-compliant  
>> Special drives possible if required by customer |
| General | >> Flow-optimized design (minimum flow resistance, minimum shearing forces) of all bowl parts assures optimum separating and clarifying results with minimum product damage  
>> Maximum speeds (g-forces)/equivalent clarification areas achievable |
GEA Westfalia Separator has extensive experience in the drive and control technology of separation systems. Customer-specific automation of centrifuges means that their operation is particularly simple, reliable and safe.

Solutions from GEA Westfalia Separator Group combine tried-and-tested process and machine technology with the latest drive and control technology.

The automation concepts are customized in all regards to meet the individual requirements – from advice provided by experienced engineering specialists, compact control units for individual machines and powerful PC-based installation controls right through to comprehensive original manufacturer service.

High compatibility
In addition to the company’s own compact control units, the S7 control units from Siemens constitute the core item of installation automation. However, components from Allen Bradley, Group Schneider, Mitsubishi, Modicon or Telemecanique can also be used and combined with each other as required.

The visualisation options always ensure optimum user-friendliness. WinCC or Intouch can be used for up to five visualisation facilities in the process line, and can also be combined with each other.

Whether a simple notification signal or a complex process data exchange arrangement is required: the connection to existing installations or processes via software is nowadays almost obligatory.

The specialists from GEA Westfalia Separator Group use the best-known systems such as Profibus DP/PA or Industrial Ethernet as well as additional connections such as DeviceNet, ControlNet or Modbus for this purpose. Fully automatic operation of the installation can also be supported by remote data transfer by means of Internet, modem or GPRS. With GEA Westfalia Separator wewatch®, an independent and comprehensive service concept is available for remote diagnosis.
With these advantages ...

- Strong competence in drive and control technology
- Individual automation concepts
- Advice provided by engineering specialists
- Compact control unit from a wide range of manufacturers
- Up to five visualizations in the process line
- Comprehensive control possibilities from a simple reporting signal right through to complex process data interchange
- Connection via software with Profibus DP/PA, Industrial Ethernet or other systems
- Support for remote transmission and diagnosis (wewatch®)

... customers benefit from user-friendliness and security.
Central Process Engineering –
the Reliable Basis for Decision-Making

Customer-specific test series in Central Process Engineering provide a reliable basis for decision-making for all investments in mechanical separation technology.

No product to be separated is identical with another. In many cases, it is therefore necessary to perform test series before the correct decision can be taken for a specific installation. GEA Westfalia Separator Group has set up the Central Process Engineering department (CPT) for this purpose.

Depending on the specific task involved, test series can be run with the original product of the customer in a mobile pilot installation on site or in the laboratory at GEA Westfalia Separator Group. The specification of the customer with operating temperature, throughput capacity, clarifying or separating efficiency and other factors constitute additional important information necessary to enable a representative and reliable analysis.

After every test series, the customer receives informative documentation in which the technical and economic data are detailed.

Focus on investment protection
The results of Central Process Engineering can be used to precisely identify what machine type and what model from GEA Westfalia Separator Group are most suitable for the specific task. This procedure avoids poor investments right from the very beginning. The customer achieves a reliable basis on which he can take the correct investment decision.

At a glance:
- Test series with the original products of the customer
- Practical and representative
- In the laboratory of GEA Westfalia Separator Group or in pilot installations on site
- Detailed test documentation
- Specific machine recommendation
- Detailed mass balance
- Total cost analysis
Safety first: this is precisely what the service concept serv&care stands for.

Shipowners not only benefit from traditional services such as inspection, maintenance, original spare parts and repair work provided by the original manufacturer; they also benefit from proactive solutions which avoid risk, e.g. online and offline monitoring with GEA Westfalia Separator wewatch®. These preventive services are the best pre-condition for a smooth operation.

Enhanced process efficiency also follows from maximum operating reliability and machine availability. Accompanying modernization or upgrading to state-of-the-art technology also offer the option of boosting performance as required.

Training provided on site or in the modern training centre of GEA Westfalia Separator Group ensures that the plant operator’s employees receive training in the proper handling of the high-tech installations. This provides additional safety.

**Authorized workshops worldwide**

And if problems occasionally occur or if a spare part is required at short notice, the specialists are able to attend to the ships quickly. This is ensured by a global network with more than 50 sales and service companies. Authorized workshops are able to service every location in the world at short notice.

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**serv&care – Proactive Service for Optimum Reliability on Board**

The proactive, risk-free services of serv&care optimize operating reliability and permanent availability of the drive systems.
serv&care accordingly makes for maximum operating reliability, machine availability, process efficiency and budget security. And these benefits are provided throughout the entire life cycle of the entire installation.

Service from the original manufacturer:
- Service engineers quickly on site
- Extensive service network
- Risk avoidance through service provided by the original manufacturer
- Proactive solutions
- Upgrading to boost performance
- Crew training

In addition to traditional services such as maintenance or repair, serv&care also provides solutions which avoid risk and with which the installation availability can be proactively assured.
We live our values.
Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

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