

Liquids to Value



GEA Mechanical Equipment:
Liquids to Value



GEA Flow Components



GEA Homogenizers



GEA Mechanical Separation



Valves · Pumps



Homogenizers



Separators · Decanters
Process lines



A Segment of the GEA Group

GEA Mechanical Equipment is a segment of the GEA Group, which is one of the leading providers of process engineering solutions in the world. The integration in this group assures the resources of a successful international technology group to the segment and its business units.

GEA Group Aktiengesellschaft is one of the largest system providers for process engineering solutions. The internationally operating technology group concentrates on process technology and components for advanced production processes in a wide range of end markets. 70 percent of sales are generated with the industries for food and energy which are achieving long-term growth.

The group has its headquarters in Bochum (Germany), and employs more than 20,000 persons throughout the world. With its operating enterprises, it has established a presence in more than 50 countries and all growth regions. The GEA Group is one of the market and technology leaders in 90 percent of its areas of operation.

This continuously expanding know-how is also reflected in the range of products and services offered by the individual segments of the group. These segments com-

prise GEA Farm Technologies, GEA Heat Exchangers, GEA Process Engineering and GEA Refrigeration Technologies as well as GEA Mechanical Equipment. The segments carry out joint projects and thus generate synergies. Market proximity and mobility of all segments of the GEA Group are based on a local structure which is applied in practice: the freedom to conduct business and assume market responsibility. The GEA Mechanical Equipment segment combines all group activities related to mechanical separation, homogenization, pumps, valves and tank cleaning. Its process engineering components ensure smooth processes and production procedures with optimized costs in virtually all major areas of industry.

With the Business Units GEA Mechanical Separation, GEA Flow Components and GEA Homogenizers, the segment supports customers in many key sectors and in all global markets for using product flows as value flows.



Material Flows are Value Flows

The world's population is growing! It needs drinking water, food, medicines and energy. The process technology for producing, refining, treating, recycling and disposing of these flows of valuable material is becoming more and more efficient.

Our "Liquids to Value" performance promise is the result of over 100 years of know-how and innovation from GEA Mechanical Equipment.

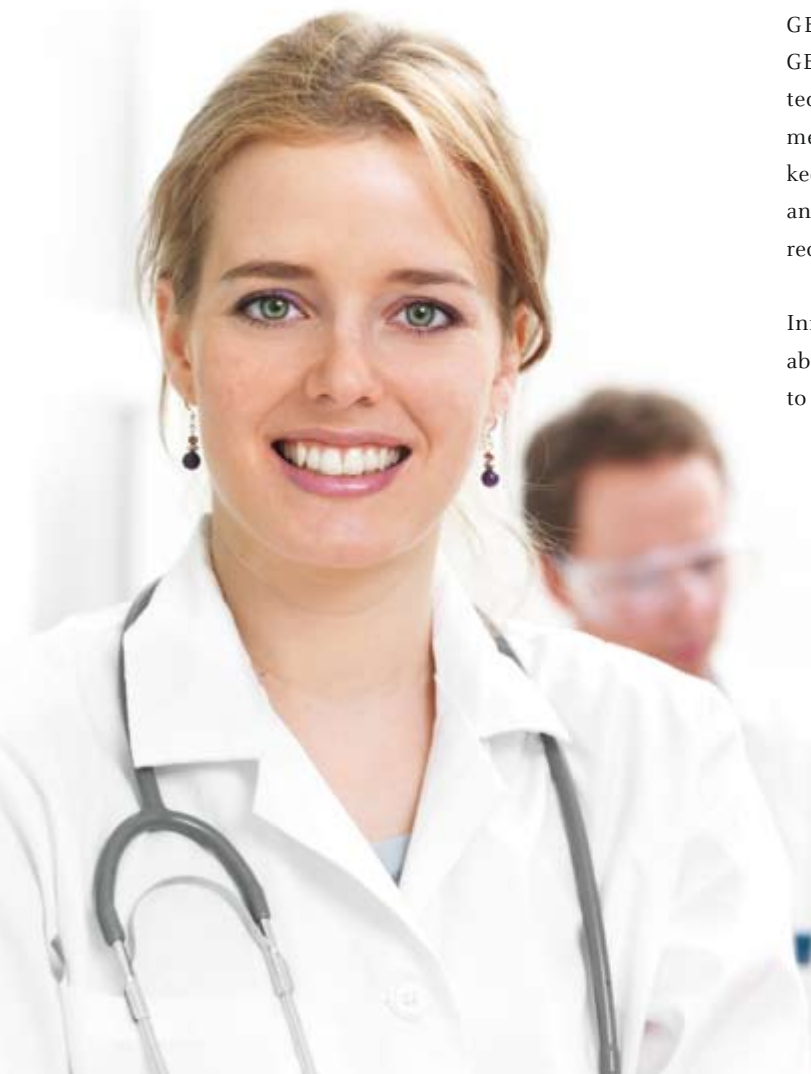
This claim contributes towards maintaining the foundations for life of future generations and makes our process technology fit for the future.

The aim of our work is to design process technology sequences so that raw materials and natural resources can be used at every stage of the industrial production process, not just to create value, but also in an environmentally-friendly manner.

Bundled competence for liquid treasures

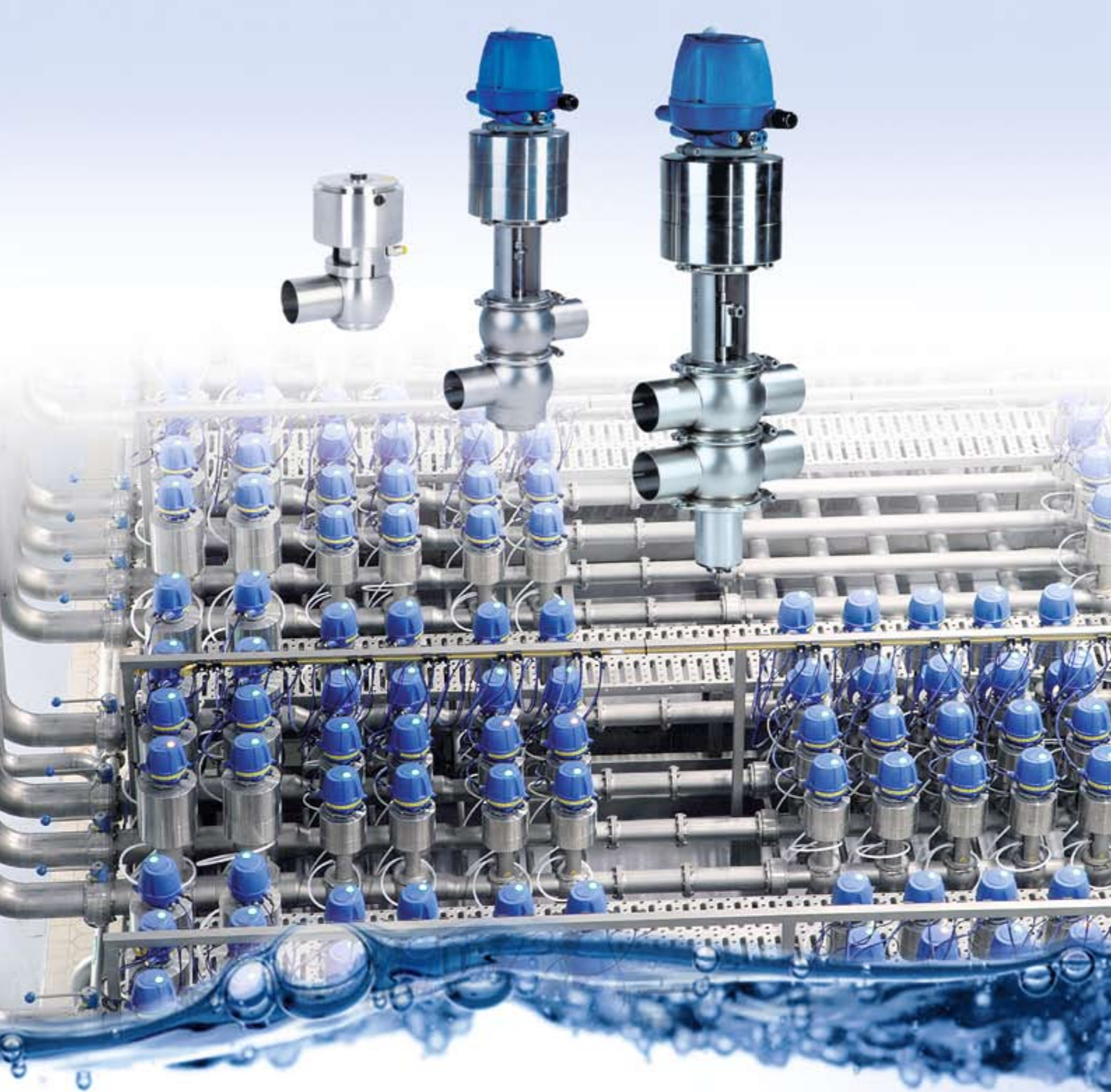
GEA Mechanical Equipment bundles and coordinates the services of leading companies specializing in process engineering. GEA Niro Soavi homogenizers, GEA Tuchenhagen process components and GEA Westfalia Separator mechanical separation technology focus on the core processes of the commercial production of goods and services whilst keeping an eye on both complex high-end solutions and high-volume design of the production processes required.

Innovative technologies facilitate sustainable, profitable growth for our customers. We call this "Liquids to Value."





The knowledge of leading specialist companies is concentrated in every drop which flows through the systems we design. Completely in line with our philosophy of Liquids to Value.



GEA Flow Components also stands for spectacular innovations. Its primary company, GEA Tuchenhagen, launched a double-seat valve for the dairy-processing industry which paved the way for non-stop production.





Business Unit GEA Flow Components

The Business Unit GEA Flow Components with its principal company GEA Tuchenhausen has been supporting customers worldwide for more than 75 years in developing and supplying efficient components for economic application in industrial process lines. Competent consulting and target-oriented service always make sure you receive the optimum solution.

GEA Tuchenhausen develops and produces well-engineered process components and provides services for smooth production processes: regardless of whether milk, beer, pasty food or fine chemicals are flowing through customers' pipelines – what count in the end are product quality and an economical manufacturing process. For many years, this is precisely what GEA Tuchenhausen has stood for. The product portfolio is wide-ranging and includes valves, pumps, cleaning technology, process connections, tank safety systems and expansion compensators.

With production facilities in Germany, Poland and China, GEA Tuchenhausen has always been a strong partner for its customers around the globe and is one

of the world's leading manufacturers of process components for the brewing, beverage, dairy and food industries, as well as for the pharmaceutical, biotech, fine chemicals, cosmetics and healthcare sectors.

A high level of productivity, economy of operation and product consistency are the features of components from GEA Tuchenhausen. The company also sets exacting quality standards for each individual component based on state-of-the-art production systems and techniques, continuous quality monitoring, high levels of investment in research and development, top quality standards and of course, highly-qualified and motivated staff.



Business Unit GEA Homogenizers

The GEA Homogenizers Business Unit specializes in high-pressure homogenizers, dispersion technology and cell disruption. The primary company, GEA Niro Soavi, is a world leader in this field. Developments by this company are used in the dairy and food industries and in the chemical and pharmaceutical sectors; characterized by great reliability, they aim at the best possible efficiency in every application and process.

GEA Niro Soavi is a global technology and market leader for high-pressure homogenizers and pumps. The company was founded in Parma (Italy) in 1947 and at an early stage specialized in the development, manufacture and sale of this specialist machinery for various branches of industry. GEA Niro Soavi supplies a variety of modules every year, from small laboratory units to large, fully-automatic machines with throughputs of up to 60,000 l/h and an operating pressure of 2000 bar.

The corporate objective is to subject the quality and reliability of products to continuous improvement for ideal added value in the respective application. All assemblies are manufactured to the highest

standards of quality, with GEA Niro Soavi working to certified quality systems which also form the basis of its corporate philosophy. These quality systems apply equally to design, production, sales and customer service.

GEA Niro Soavi products meet all the relevant international standards in the food and dairy industries (e. g. 3-A), as well as the regulations governing the biotechnology and pharmaceutical sectors, machinery safety and quality standards (ISO 9001:2008). GEA Niro Soavi is also the first manufacturer in the world able to supply machines for explosion-hazard zones as per the ATEX standard (Directive 94/9/EC), with proven and state-of-the-art technical solutions.



Handling liquids under high pressure up to 2000 bar and scaling up from a pilot project to fully-automatic large-scale production, GEA Homogenizers make high-pressure homogenization a technology of its own.



GEA Mechanical Separation honors the “Liquids to Value” claim with mechanical separation technology which has convincing features of maximum separation precision and throughput for minimal operating cost.



Business Unit GEA Mechanical Separation

GEA Westfalia Separator is at the forefront of mechanical separation technology with command of over 3000 procedures and processes. The solutions of this business unit contribute to securing food for the world's population, improving medical care and using energy more efficiently. Raw materials are used more sustainably and material flows which pollute the environment are minimized.

GEA Westfalia Separator was founded in 1893 and is based in Oelde (Germany). The company is at the forefront of this technical field, and with over 50 sales and service companies all over the world, it occupies a pole position in mechanical separation technology.

Value-creating solutions for the food, chemical and pharmaceutical industries, for the marine, energy, oil field, environmental technology and renewable resources sectors set standards in process efficiency and availability. The ability of this business unit to innovate is based on experience of over 3000 different procedures and processes.

Whether low or high-volume flows are involved, whether the method is liquid or solids-based, whether production is under cleanroom conditions or ATEX-protected – separation technology solutions support every requirement and provide maximum benefit throughout the entire lifetime of systems.

Key features are a broad range of services, a high level of separation precision, low energy consumption, simple operation, small number of staff required, absolute operational reliability and individual service.

The company is characterized by its ability to turn new developments rapidly into market-ready processes and systems. A key foundation for this is specific investment in research and development. GEA Westfalia Separator has accordingly developed numerous optimizations in mechanical separation technology and prepared them for the market with first-class engineering.

High-Tech for the Most Popular Energy Drink in the World



Dairy and milk products are among the most important and versatile foods of all. As well as freshness and purity, today's consumers expect above all variety and a longer shelf life. GEA Mechanical Equipment supplies dairies with tried and tested solutions for first-class quality and broad product diversification.

Milk is the oldest and at the same time most natural "energy drink" in the world. Alongside the health aspect is the enjoyment factor. New specialties, not least in quark and soft cheese products or flavored drinks, have resulted in chiller cabinets for dairy products becoming larger than ever.

The success of a new milk product depends on many factors: this also involves the ability to translate a good product idea quickly into economic production. In this respect, GEA Mechanical Equipment offers extensive experience and the possibility to ascertain verifiable findings for rating the installations and supporting the investment decision by carrying out appropriate tests in the pilot plants of the technology center for process engineering. Consequently, the customer is supplied with mechanical separation technology, valve technology, process components and, when necessary, homogenizers whose performance parameters are optimally adapted to the new product.

GEA Mechanical Equipment offers the milk industry tried-and-tested system solutions for all processing stages: from raw milk bacterial clarification and skimming through concentration, homogenization and standardization. The economic production of milk, quark, fresh cheese, butter, additives and probiotics is supplemented by the efficient recovery of valuable substances like lactose, whey protein, phospholipids and calcium phosphate.

Customized to the in part extremely different preferences of the international milk markets, our companies have developed a wide range of innovative processes. Hot milk processes are supported in equal measure as cold milk processing.

All systems work to state-of-the-art hygiene standards and aseptic executions. The adjusted fat content and other milk-specific parameters are complied with reliably, even at very high throughput capacities. GEA Mechanical Equipment constantly demonstrates that gentle product treatment and high yield are not mutually exclusive.

A particular advantage is in the close-knit nature of our business units. The perfectly-matched components make possible that all benefits of a one stop solution are generated also in the optimization of existing installations.





The dairy industry is more lively than ever. Innovative products like ESL milk are giving it fresh impetus. GEA Mechanical Equipment is contributing towards the continuing future potential of value-creating business in the dairy products market.



The beer market too is today characterized by a high level of product diversification. Whether traditional Pilsner or innovative beer mixers: GEA Mechanical Equipment offers breweries optimum pre-conditions to serve their markets with profitable products.

Pure Enjoyment – from Beer to a Smoothie



Whether the product is beer, wine, coffee, tea, soy drinks or fruit juice, the companies of GEA Mechanical Equipment support the beverages industry with smooth processes. Innovative processes are designed to achieve absolute product purity, a high yield for the raw materials used and considerably reduced consumption of water and energy at the same time.

Hot coffee at breakfast-time. Fruit juice after sport. A cold beer with the football. Wine with a good book. Or maybe a glass of champagne instead? Enjoying high-quality drinks is simply an accepted part of modern life. At the same time, consumers have greater product choice than ever before. The development of new coffee and beer specialties or the invention of fashionable products like smoothies bring more and more variety into our glasses.

The industry's requirement for beverage technology which not only ensures first-class quality but also supports the development of variety in the range is correspondingly great. What is more, lean, smooth processes and high yields are acquiring as much importance as gentle treatment of the environment and of resources.

The machines, systems and process lines from GEA Mechanical Equipment companies are perfectly designed for these objectives. They secure first-class product results, allow product differentiation to suit the market and minimize the consumption of water, natural resources and energy. These characteristics mean that the components are as in demand in modern breweries and innovation-focused coffee and juice manufacturers as they are in traditional wineries.

GEA Mechanical Equipment provides complete processing lines for all process stages, from juicing or extraction to process water treatment and recovery of valuable raw materials. The close cooperation between GEA Niro Soavi, GEA Tuchenhausen and GEA Westfalia Separator produces a particular advantage. Interfaces are reduced and even complex engineering tasks can be managed quickly and with utmost precision.



Always on the Safe Side

The process lines of GEA Mechanical Equipment have proved themselves as much in the gentle separation of fragile cell cultures as in the efficient treatment of concentrated acid compounds or explosive mixtures. All hygiene and safety requirements are consistently satisfied. The chemical and pharmaceutical industries benefit from engineering of the highest standard.

There would be no modern life without chemistry. Whether we are talking about surfactants in washing powder, PVC in floor coverings or phosphoric acid in soft drinks, there is hardly any area unaffected by developments in the chemical industry. Pharmaceuticals, in their turn, are contributing to humans being able to enjoy longer and happier lives than was the case just a few generations ago. But it's a long road to the compact disc, the anti-aging lotion or the new flu vaccine. The basic primary materials have to be obtained, treated and processed further and this requires complex processes.

The companies of GEA Mechanical Equipment are involved in these value-creating processes in many ways. Their components are used in organic and inorganic chemistry, in petrochemistry and plastics manufacture, as well as in mineral processing.

The pharmaceutical industry uses the systems among other things for obtaining vaccines and cell cultures. The extraction of antibiotics, steroids, vitamins or fragrances and flavorings is also supported.

Whether sterile valves, extraction separators or homogenizers are involved, all components are designed to extraordinarily high standards of safety, hygiene and product quality following GMP requirements. CIP, SIP and cleanroom requirements are consistently satisfied. Gas-tight systems are available for explosion-protected zones.

Customers all over the world from the chemical and pharmaceutical industry use complete solutions from GEA Mechanical Equipment.

GEA Niro Soavi, GEA Tuchenhausen and GEA Westfalia Separator have already proved in numerous projects that their combined engineering is a key element in process efficiency, economy and sustainability.





GEA Mechanical Equipment combines the complex safety requirements of the chemical, pharmaceutical and biotechnology industries with top product quality and a significant drop in operating costs.



For many companies, renewable resources represent an unprecedented option for the future. They contribute to securing food for mankind, providing a substitute for fossil fuels and are the basis for entirely new industrial products which would not have been possible to make before.



On Behalf of the Future

Saving resources and sustainability will play a key role in the supply of basic requirements for mankind in the future. Companies banking on solutions involving renewable resources will find a technically competent and committed partner in GEA Mechanical Equipment.

Renewable raw materials are the option of the hour for companies from an enormous range of sectors. In terms of sustainability and saving resources, these are an ideal solution for many current challenges. In concrete terms, they not only contribute to securing food for mankind and providing a substitute for fossil fuels, renewable resources are also a basis for innovative processes. In some cases, they even enable completely new, previously unimaginable products to be developed.

With the products from GEA Westfalia Separator and GEA Tuchenhausen we are specialized in the sector of renewable resources. Many of these innovative process lines are already successfully used in obtaining starch and proteins, oils and fats or in the production of bio-fuels and in the fermentation industry.

A sustainable increase in productivity is at the core of renewable resources processing. Bundling the innovative expertise in the GEA Mechanical Equipment segment specifically expands and improves the way the material and energy of renewable resources is used and opens up new potential profit for companies, even in traditionally established production fields.

GEA Mechanical Equipment intensively looks after users who are planning new products and processes – from the first lab test to the pilot phases to the implementation of large-scale industrial production. In advance of any product development, for instance, it is clarified whether the required quality of new recipes is also achievable on an industrial scale and what performance dimensions the process technology will have to include. Investors thus reduce time-to-market and know at an early stage what budgets will have to be assumed.



Clean Solutions – Even for the Giants of the Ocean

Smooth-running transport of goods across the world's oceans and supply of energy to its population are the power-houses of everyday life. Modern commercial shipping is dependent on smoothly-operating drive systems. GEA Mechanical Equipment contributes to fuels and oils being treated both efficiently and with minimum environmental impact. In addition, our technology makes it possible that the fragile ecosystems of our oceans are protected.

Without a continuous supply of goods and energy, our “modern” life would soon collapse. This makes smooth operation of the shipping, oil field and energy sectors all the more important. Ships continue to be the most significant form of transport for the worldwide goods trade. Oil fields open up access to oil and natural gas, and power stations make sure that electricity comes out of our sockets around the clock. For these sectors to work smoothly, reliable and secure drive systems are required.

GEA Mechanical Equipment has been operating successfully in these business fields for decades. The central task is the treatment and conditioning of fuels, fuel oils and lubricants.

The high-performance engines of modern ships are just as dependent on this as the sensitive diesel and gas turbines in power plants. Mechanical separation technology from GEA Westfalia Separator is the benchmark here. The compact high-speed centrifuges

have the highest g-force in the world and fully automatically enable maximum specific separation performances with optimum separation precision. This means top performance and operational reliability for all drive systems.

At the same time, the disposal problem at sea is solved. A range of separators in eco-friendly design capable of removing oil from bilgewater and oil-containing slurries to leave a residual oil content of below 5 ppm. This means that practically pure water can be returned to the oceans. The requirements of the IMO and national regulations even for particularly sensitive marine areas are thus consistently satisfied.

Depending on requirements, GEA Westfalia Separator provides customers with individual components or complete process lines. The design is arranged to reduce interfaces and planning complexity, enabling considerable savings to be achieved in terms of both weight and space required. This is a significant benefit, especially in the cramped engine rooms of ships.



GEA Westfalia Separator offers the obvious response for the environmentally-friendly treatment of bilgewater and oil-containing slurries. Purities < 5 ppm are consistently achieved.



Mechanical separation technology from GEA Westfalia Separator is designed for flexible process integration. If required, the systems are also available in the form of mobile units which can be transported quickly and easily from one point of use to another.



The Source of Sustainability

Whether the aim is to obtain drinking water, dispose of sewage sludge or treat process water, GEA Mechanical Equipment sets standards for economy and sustainable protection of the environment across the world. System solutions from GEA Mechanical Equipment put companies and municipal facilities in a position to cut both operating costs and consumption of resources to a significant extent.

As with oil, global drinking water reserves are also limited. Increasingly, the focus is on using water sparingly and above all on new, more efficient ways of obtaining drinking water. Plant operators face the challenge of performing these and other tasks, such as the treatment of sewage sludge or process water, at minimum expense. With GEA Westfalia Separator, GEA Mechanical Equipment responds to these challenges which convince from both economic and ecological points of view.

GEA Westfalia Separator provides comprehensive system solutions for sustainable use of precious resources: over 3500 stationary and mobile plants all over the world are already improving the processes of obtaining drinking water and treating waste water.

Customers are benefiting from high throughputs for a low energy consumption, especially when dewatering and concentrating sewage sludge. The figures speak for themselves: decanters from GEA Westfalia Separator concentrate sewage sludge so efficiently that up to 90 percent less surplus activated sludge results.

Another important application is the treatment of industrial process water. Whether this is waste water from brewing or cellulose, intelligent processing can considerably reduce the quantity for disposal. At the same time, the systems allow raw materials and valuable materials to be recovered, increasing the economy of the overall process again. Wherever system solutions are used, they always take account of the restrictive cost management of industry and of municipal waste water treatment plants.





Original Manufacturer Service – Available Worldwide

Liquids to Value – GEA Mechanical Equipment supports this promise also with an Original Manufacturer Service philosophy which responds to the requirements of economic production processes comprehensively and proactively.

This commences with competent consulting by experienced project engineers as preparation for an investment decision and continues in the modular structured after-sales service. GEA Mechanical Equipment has a global presence with sales and service companies as well as authorized workshops. The experts from the business units are therefore always quickly on site when they are needed. For example, with proactive applied consulting, which analyzes the ongoing operation of the installation and identifies optimization potential. Our Reliability Consultants perform this task and develop recommendations with their specialist knowledge with which process efficiency, plant availability and budget control are improved. Practice-oriented training of the operating personnel by experienced trainers of the original manufacturer also serves to meet the high economic demands.

Original Manufacturer Service includes the deployment of experienced service technicians for professional inspection, maintenance and repair as well as the fast provision of spare parts. All these measures are designed to avoid unscheduled downtime or to keep it as short as possible.

Further, with customized service level agreements, the business units give the customers the option of planning their maintenance and repair budgets as efficiently as possible. This can be, for example, agreements on basic services. Premium service level agreements are a further option for defining fixed services for a specific budget. In any case, the customers can enjoy the security which only the original manufacturer of the components and installations can offer for sustained and reliable operation!



Our project engineers make sure that the latest relevant technologies and processes are used in your liquid processing task.





Wherever You Need Us – We Are There to Serve You

For us, market proximity is more than just a buzzword. It is a fundamental pre-condition for a value adding partnership and secures sustained success for our customers.

GEA Mechanical Equipment is present all over the globe. More than 70 production, sales and service companies ensure that you can take advantage of our services wherever you need us.

To assure 24/7 availability of your plant when required, a global network of authorized workshops provides the necessary support. By this means, the process engineering know-how of the specialists of GEA Mechanical Equipment as well as the genuine spare parts of the technology leader are quickly available on site.

Our network of state-of-the-art production facilities likewise spans the globe. Good manufacturing practice and a global quality management certified to DIN EN ISO 9001:2000 ensure efficient customer support on the markets of today, tomorrow and beyond.

Liquids to Value is the performance criterion to which everything is oriented at GEA Mechanical Equipment. It ensures a holistic cost-benefit optimization throughout the entire life cycle of modern process technology: from planning, installation and commissioning of the machines right up to service, upgrades and buy-back concepts for used machines.

This means maximum performance at the lowest possible cost – wherever your company is at home.

You want to know where we are represented in your country? You can check it out on our homepage: www.geaequipment.com



Liquids to Value – the Whole of Life Flows. Not a Drop May Be Wasted.

Milk · Food · Energy · Beverages
Renewable Resources · Cosmetics · Chemistry · Pharmaceuticals
Biotechnology · Environmental Technology · Marine · Oilfield







GEA Mechanical Equipment

www.geaequipment.com