The GEA Group

The GEA Group is an international technology group focussing on process technology and components for sophisticated production processes. The Group is a market and technology leader in its business areas and is listed in Germany’s MDAX stock index (G1A, WKN 660 200) and the STOXX® Europe 600 Index. For further information visit www.gea.com

GEA Process Engineering

GEA Process Engineering is one of six segments in the GEA Group. It is a global company with regional home and personal care technology centres and manufacturing facilities in China, Denmark, India and the USA; and local representation by 30 local market companies worldwide. It is customer focussed, dedicated to helping its customers select the right technologies and processes for their individual applications, from conceptual design to project handover & post-project support services or complete life-cycle care.

GEA Process Engineering includes some of the world’s most trusted brands: GEA Tuchenhagen, GEA Diessel, GEA Nu-Con, GEA Avapac, GEA Colby, GEA Niro Soavi, GEA Breconcherry, GEA Aseptomag, GEA Niro, GEA Procomac, GEA Wiegand.

GEA Process Engineering Ltd. (UK)

GEA Process Engineering Ltd. (UK) was formed by bringing together the UK activities of market leading brands GEA Tuchenhagen, GEA Niro and GEA Procomac to create a single source for innovative technologies and complete process lines.

The company is a hygienic process engineering and equipment specialist to the home and personal care, brewery, beverage & juice, chemical, food, dairy and pharmaceutical & biotechnology markets. The scope of supply includes concentration and drying systems, emission control, filling & end-of-line packaging, liquid processing, flow components, process control and automation and after sales service.

Applications

Personal Care and toiletries
- Shampoos and conditioners;
- Bath and hand wash liquids;
- Skin care products;
- Gels, creams and lotions;
- Deodorants;
- Hair colouring.

Consumer healthcare
- Toothpaste;
- Mouthwash;
- Ointments;
- Over the counter liquids.

Beauty and cosmetics
- Lipstick and lip gloss;
- Foundation;
- Mascara.

Home Care products
- Liquid detergents;
- Dishwashing liquids;
- Bathroom, kitchen and toilet cleaners;
- Bacterial cleaners;
- Bio/non-bio washing liquids;
- Fabric softeners;
- Pre-soaking agents;
- Fabric finishes;
- Water softeners;
- Bleaching liquids.
GEA Process Engineering Ltd. (UK) is the global Technology Centre for Home and Personal Care (HPC) applications for GEA Group. It’s where the technology and systems integration experience come together for maximum efficiency, profit and quality for HPC industries worldwide. The scope of supply includes: raw material handling, mixing and blending, storage, end-of-line packaging, product recovery, cleaning and sterilising in place, and automation.

Whether the need is for a single component or a complete turnkey plant, GEA Process Engineering has the right technology, and the right knowledge and experience to meet its customers’ needs every time in terms of product safety, productivity, profitability and quality. It also has the skill, experience and fundamental understanding of the products and processes involved, gained through its long history and unrivalled knowledge, that can make a key difference to any project, large or small.

GEA’s market-leading technology, across the whole scope of supply, provides a unique synergy that can aid product development, provide fast-tracked design and installation, reduce time to market and create best of breed plants that perform now and well into the future. We also integrate third party equipment if that is a better solution for the project.

Design Freedom
‘Design Freedom’ from GEA is a concept that has allowed the company to hone its design and integration service to perfection without imposed restrictions from standard products. GEA can call upon its years of experience in handling difficult applications – such as those involving flammable, sticky, hygroscopic or viscous products – to find the right answer with the minimum of bespoke development, so keeping costs under control and achieving the fastest possible time to market.

Home and Personal Care process technology and know-how

The single source for home and personal care processing worldwide
Hygienic by Design

Every component of a GEA Home & Personal Care processing line is designed to meet the strictest hygiene standards. This ensures safe operation and reliable product quality with a repeatable security of outcome that maintains customers’ brands and underpins the values that have built them.

As the demand for HPC products to meet and sustain physical, chemical and microbiological requirements continues to increase, so does the demand for hygiene, reliability and flexibility. As well as being hygienic, today’s processing equipment needs to be utterly trustworthy, adaptable to changing market demands, and provide a secure platform for innovation that allows customers to develop new products and bring them to market securely and quickly.

But it’s not sufficient simply to keep up with current good practice. GEA is known worldwide as an innovator, a company that leads the market by driving standards to which others aspire. Hygienic design therefore is at the core of GEA’s engineering concept. It is taken into account early in the design phase of every project and carefully followed through the project’s execution and installation.

GEA process equipment is certified by The European Hygienic Engineering & Design Group (EHEDG). EHEDG certification is granted on fulfilment of strict Hygienic Design Criteria Guidelines and with over 30 years of hygienic and aseptic process design experience GEA ensures that all requirements for obtaining a microbiologically safe and high quality consumer product are met.
Mixing Technologies

Effective mixing is at the heart of every home and personal care processing plant. Some applications need a batch approach, some need continuous mixing; all need GEA expertise. Mixing is the most demanding operation in process operations; it is the key factor in determining the quality of the final product. It is, therefore, essential for processors to make the right choice of technology that will produce a homogeneous product, without ‘fish eyes’ or lumps of powder, quickly and with the lowest possible total cost of ownership.

For many years GEA has been a world leader in providing technically advanced mixing systems for the home and personal care sector for both batch and continuous processing. Today, with its new range of MIXING FORMULA™ products, GEA retains its position as the global technology leader for mixing systems. What’s more, it has the experience, understanding, process knowledge and group know-how to integrate these best of breed technologies to build world-beating plants for its customers.

Single pot, batch and inline processing
Single pot processing is often the easiest and least expensive way of producing a homogeneous product, in a high shear or no shear environment, with ultimate flexibility and batch traceability. BATCH FORMULA™ from GEA effectively produces a uniform product, without the need for recirculation loops thereby reducing processing time, saving energy and optimising the CIP cycle. A key feature of BATCH FORMULA™ is its use of a vacuum to allow the introduction of powder from below the liquid surface; this technique achieves the instant wetting of ingredients even with difficult to process, high viscosity products.

Single pass and continuous processing
Continuous mixing technology for the home and personal care sector provides large volume repeatability, but usually requires a bespoke design approach. Because every application is different, GEA Process Engineering employs all its design and integration experience, with its fundamental knowledge of the GEA product range, to identify ‘best of breed’ technologies and bring them together to optimise processes and develop individual plants that perfectly match their purpose.

All GEA technology is designed from the outset to work together to aid fast plant development, bring products to market quickly thereby opening up new marketing opportunities for processors, and to ensure both product quality and consistency.

Key features of BATCH FORMULA™
• High shear and no shear in the same vessel;
• Instant emulsification of powder for homogeneous product;
• Highly efficient mixing to produce a stable suspension;
• Soft blending of fragile particles avoids damaging the product;
• Hygienic design ensures total drainage of the mixer between batches;
• Highly versatile for multiple applications.
Bulk Powders

Bags & Big Bags

Minor Powders

Making

Finished Product

Storage/IBC Filling

Filling

Distribution Blocks

Product Recovery (Pigging)
GEA components

Pumps: rotary lobe and centrifugal

GEA Process Engineering offers a range of pumps, including centrifugal, self-priming and rotary piston pumps all to EHEDG design standards for key applications within the home and personal care industries. The technology has been designed specifically to keep flow paths free from dead corners, convey product evenly and gently, ensure high product quality, and use the minimum of energy, water and raw materials.

Hygienic & aseptic valve technology

Valves are core components in all piped process plants. GEA’s range of Tuchenhagen and Aseptomag valves has an enviable reputation for reliability, efficiency, easy maintenance and low life cycle cost.

By using its experience, understanding, process knowledge and group know-how to integrate these best of breed technologies at the design stage or as retrofit components, GEA is able to build and maintain world-beating plants for its customers.
Hygiene is paramount during HPC production processes, yet reducing water consumption and limiting effluent discharge are also a key priority for manufacturers. Today’s plants must satisfy the highest hygienic design standards to avoid product degradation and contamination during plant operation. GEA is able to help customers meet this growing demand for better use of water resources during manufacture. For example, where effective and correct cleaning is essential before Sterilization-in-Place (SIP), GEA’s Clean-in-Place (CIP) technology offers significant advantages to manufacturing facilities via precisely constructed flow paths that are free of dead space. This ensures consistent, efficient and reliable cleaning of process equipment and the minimum of production downtime.

Cleaning Technology

GEA cleaning technology provides a range of top level cleaning heads and ancillary equipment for most hygienic and sterile applications in the home and personal care market. Although the range is extensive, GEA will assist you in developing tailored solutions to meet your specific process needs. Efficient cleaning helps to reduce downtime, waste disposal costs, and water and detergent consumption.
**Product recovery**

GEA product recovery systems can help customers recover 99% of valuable products during batch changeover. They have become an indispensable part of modern process lines as a way of minimising product losses and the cost of waste water disposal. Product recovery systems are fully compatible with all CIP/SIP operations and are suitable for any application where valuable, viscous products can be recovered from plant pipework. Effective product recovery increases yield, reduces emissions and aids effective cleaning.

**Powder handling**

Powder handling is a key part of many HPC processing plants. GEA Process Engineering has the ability to design, supply and commission entire plants or provide discrete advanced engineering to meet all clients' needs. GEA technology includes: truck and container unloading; pneumatic conveying and blower packages, for clean, efficient, cost-effective transfer of powders throughout a plant; bulk storage for both raw materials and finished products; bag unloading, batching and dosing, for handling systems that require bulk weighing of large volumes of materials; and sifting & blending systems for the efficient screening of dry powders and granular products. All are designed specifically to handle fragile products and meet all appropriate sanitary conditions.
Packaging and palletising
GEA Procomac palletisers are designed for handling secondary packages such as shrink wraps, trays, cartons and cases. Each machine is made from modular units that use common software and hardware to ensure the highest level of performance, reliability and economy. Power is supplied via inverters and controlled with encoders to allow users to customise the palletising process for any product and to store the program in the memory of the PLC.

Automation and Process Control
Precise control is essential for the world’s best processing technology to perform as it should. GEA’s automation, electrical engineering and instrumentation gives finger-tip control for the entire plant for accurate formulation, top quality products and optimum productivity. GEA process control technology also links the shop floor with management and administrative functions to provide full data acquisition for track and trace operations.

GEA uses its extensive experience and product knowledge to provide a comprehensive application assessment survey and consultation service to ensure the supply of the most appropriate technology that will achieve maximum productivity, efficiency and quality.

Capabilities include: design, manufacture, procurement, coding, integration of client’s free issue software, validation, installation, testing/inspection and commissioning, with post project maintenance and 24/7 support provided, on both GEA and other manufacturers’ equipment, as required to meet customers’ needs.
Research and Development

GEA Process Engineering has some of the world’s most advanced product and process development facilities to help its customers perfect product formulations, establish the best process equipment and provide pilot-scale production to help bring new products to market quickly at the lowest possible cost.

The test centre in Copenhagen, for example, has a wide range of equipment available and is staffed by some of the most experienced personnel in the process equipment industry. From concept, through pilot trials and final analysis at on-site laboratories, staff consult with customers to determine the optimal process conditions on a case-by-case basis and to ensure seamless scale up to full production. Staff also have an in-depth understanding of current market trends and emerging technologies.

Services provided include:

• Feasibility testing to evaluate technologies and choose the most appropriate;
• Pilot testing to provide vital, basic design data so that processes can be optimised for a range of conditions;
• Laboratory analysis throughout the testing programme;
• Small-scale production runs for market analysis and regulatory approval;
• Data analysis on factors such as: particle size distribution, bulk density, moisture content, photomicroscopic analysis, flowability and hygroscopicity.
Bringing everything together

GEA Process Engineering has access to market and technology leading products and, possibly, the most comprehensive reservoir of processing knowledge and experience in the world today. However it is not the technology itself nor the experience and expertise alone that matters, it’s the way in which the whole package comes together to conceive, design, build and run the most advanced processing plants that is the real GEA magic.

The relationship
The relationship with GEA Group starts long before the initial contact. Many of today’s engineers will have worked with and learned to trust GEA technology during their education and training. GEA has built a worldwide reputation for excellence, passion, integrity and responsibility that is infused throughout the whole organisation and characterises everything it does, internally and externally. It is by living these ideals that GEA provides the platform from which to build enduring business relationships based on trust, confidence and proven performance.

Planning
As a manifestation of those values GEA Process Engineering works closely with its customers, from the first enquiry, to establish their objectives and assess the most practical way to achieve them. That’s where the experience comes in. By pooling the knowledge gained over many years, and through a fundamental understanding of the available technology, GEA engineers bring together the necessary expertise to smooth the conception stage of any project and provide a User Requirement Specification (URS) giving a clear path forward.

Project management
An experienced GEA project manager - often reporting to a dedicated project director and a GEA board-level steering committee - will take responsibility for the successful delivery of the whole project. The project manager will have completed GEA’s rigorous project management training programme, be familiar with industry standards and requirements, and be able to assess technical, social and business risks that have a bearing on the project.

The concept
GEA engineers perform preliminary engineering to confirm mutual understandings, decide process concepts, define the process boundaries and determine the best way to integrate the process modules into the overall plant design.

Design engineering
The project manager directs the integration of process equipment, piping, instrumentation and electrical installations. The programme will include regular stage gate reviews and employ the latest CAD systems to generate manufacturing and installation diagrams, and 3-D imaging techniques for Virtual Walk Through.

The control system
GEA control systems are designed with GEA technology in mind and are operated by experienced in-house staff with dedicated industry experience working side-by-side with process specialists.

Fabrication
GEA has its own workshops in China, Denmark, India and the USA and all offices use approved, local contractors that have been carefully selected for their quality of workmanship, efficiency, sustainability, cost and compliance.

Installation, commissioning and start-up
Whether the installation work is performed by GEA or the customer, GEA engineers who have been involved in the programme from the start are available to provide back-up. Commissioning and start up involves dry testing, safety tests, initial cleaning and water testing, and production trials before handover.

Fast Track development: Some new-build projects allow a fast-track approach to design in which the building construction and the equipment fabrication takes place simultaneously cutting months from the project time and helping customers bring products to market more quickly. FAT tests can be done in the factory prior to dispatch leaving the minimum of testing to be completed on site.

Training and initial support
Key operational staff are included as part of the commissioning and start-up team so they become familiar with the equipment at an early stage. Formal training from GEA technicians follows with additional support provided after start-up as necessary.
Service and after sales

At GEA Process Engineering the concept of service and after sales represents much more than just spare parts and service contracts (though these are important too). It’s a whole life service that incorporates initial and continual operator training, spares planning and inventory control, upgrades to meet the needs of changing production or market demands, ongoing advice to keep customers up to date with the latest techniques and technologies, and planned maintenance programmes to make sure a plant remains at optimum production at all times.

Automation support and GEA Assist

The GEA Automation Support service offers flexible options from remote-only access Monday to Friday up to remote and physical response around the clock. It also provides access to the unique GEA Assist technology, a secure browser-based application designed to host and manage a variety of online services relating to plant maintenance.

Sustainability

Environmental protection and sustainability have become an essential part of any production process. In the home and personal care markets these concepts have come into sharp focus and consumers increasingly demand processes that do not damage the environment or waste the Earth’s natural resources.

For many years GEA has developed its equipment and processes, not only to help meet these demands but also to provide irresistible cost benefits to its customers to help environmental responsibility make good financial sense as well as being commercially essential. For example: consistent product quality reduces wastage and product re-working; reduced emissions saves disposal costs and helps protect the environment; clever use of energy reduces energy costs and preserves fossil fuels.

GEA works continuously to refine equipment and processes, leading the way in sustainability and helping its customers build the plants of tomorrow, today.

Help the environment and save money

- Reduced batch times or continuous processing to save energy;
- Greater efficiency through advanced engineering;
- Correct technology choice for increased yields and lower energy usage;
- Reduced chemical and water consumption;
- Consistent product quality minimises rejects and reworking;
- Energy optimisation and heat recovery systems;
- Efficient cleaning and product recovery to increase yields;
- Reduced effluent and emissions reduce disposal costs;
- Recovery of by-products to create new revenue streams.
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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.