Craft brewing solutions

Top Quality Solutions for Market-Winning Products



gea.com



GEA customer benefits:

- Single supplier of state-of-the-art technologies and systems configured to meet the requirements of each individual craft brewery
- Versatile solutions to support growth and diversification
- Tailored automation to maximize operational efficiency, excellence and product quality
- Top quality hygiene and CIP to reduce downtime and meet stringent regulations
- End-to-end expertise from the brewhouse to the cold process area
- Sustainable technologies to save and recycle energy and resources
- Dedicated project management teams to oversee each project from inception to handover
- Global training, service and upgrades for the complete lifespan of each plant
- Options including cost-effective, skidmounted equipment and configurable, modular solutions

Intelligent Solutions for Creative Craft Brewing

GEA offers comprehensive solutions for producing high quality craft beers. Our technologies are built on decades of expertise in both the hot and cold process areas, and promise to deliver optimum process safety, efficiency and sustainability.

With more than 140 years of experience working hand-in-hand with the global brewery industry, GEA offers top quality, state-ofthe-art technologies for craft beer operations. As a single source developer and supplier we strive to deliver excellence and quality, to support our customers' success. Your creativity spurs our innovation.

GEA configures and installs complete plants, processing solutions, modular and skid-mounted equipment and components that can turn the most imaginative of brewing concepts into profitable products. We supply off-the-shelf and configurable technologies to match the needs of any brewery size, from ultra-compact brewhouses for the smaller craft brewer, to flexible, modular systems for mid-sized and larger breweries. Whether you are looking to construct a craft beer plant from the ground up, upgrade your equipment, or expand and diversify production, GEA offers affordable, flexible solutions that promise to reduce your total cost of ownership and speed return on investment. GEA's intelligent solutions make our customers' breweries more efficient. We understand the pressures that brewers face to meet budget constraints and sustainability goals for minimizing the use of water, electricity and raw materials, but without compromising on process flexibility or product quality.

Our range of reliable and safe technologies has been developed for every stage of craft beer processing, from the brewhouse to the cold process area, and from malt reception through to packaging. No detail is too small. GEA expertise extends to utilities supply, innovative piping solutions and valve components. And to make sure that your plant runs optimally at all times, we can configure industry-leading automation solutions using standardized modular or tailored software to meet your plant's exact requirements.

GEA – Origin of Great Beers



Brewhouse Solutions Tailored to the Craft Brewery

GEA has developed cost-effective, skid-mounted and modular brewhouse systems that feature the same renowned technologies as our industrial-scale solutions, for processing all your recipes and ingredients.

The global trend for craft brewing is catching the imagination of consumers and brewers worldwide. Beer lovers both young and old are queuing up to try quality craft beers of every taste, aroma and color. GEA's affordable, versatile equipment and tools give craft brewers the freedom to convert their creativity and passion into market-winning beers.

Clever solutions for creative brewing

The skid-mounted CRAFT-STAR[™] may be our most compact brewhouse, but its small stature doesn't skimp on GEA features or quality. The CRAFT-STAR[™] can handle the most unusual of recipes, and is the smart and affordable choice for small breweries and start-ups. This plug-and-play option can produce up to 40 hl of hot wort per batch. The CRAFT-STAR™ features GEA's fast and efficient LAUTERSTAR™ technology for highest extract efficiency and optimum wort quality. A combined Whirlpool/wort kettle enables higher throughput with fewer vessels, and optimized hot trub separation.

The CRAFT-STAR[™] is highly adaptable so that you can try out endless ideas and recipes to process that perfect taste. Capable of processing up to seven brews in 24 hours, the CRAFT-STAR[™] is intelligent by design. Automated cleaning without a separate CIP system reduces costs, and GEARBOXX[™] control guarantees reproducible, reliable and efficient processing.

Supplied ready-to-install, the CRAFT-STAR™ is constructed using pre-engineered, standardized components, and comes





 $GEA \ COMPACT-STAR^{TM}$



GEA CRAFT-STARTM

complete with process piping, instrumentation and automatic control. GEA precommissions and checks all equipment before it leaves our workshops, reducing on site commissioning time to just a few days.

Modular technologies for maximum flexibility

The modular COMPACT-STAR[™] is GEA's flagship brewhouse platform for craft brewers. Whether you are building a new brewery or want to upgrade or expand an existing plant, the COMPACT-STAR[™] is built around pre-assembled modules that can be combined quickly and easily to fit in with any brewery layout or capacity. Providing the efficiency and performance of GEA's world-recognized industrial systems in a cost-effective package, the COMPACT-STAR[™] is ideal for small and mediumsized breweries that process 40 hl to 115 hl hot wort per batch. The standard COMPACT-STAR[™] configuration is a true GEA workhorse that features our established LAUTERSTAR[™], JETSTAR[™] and WORTSTAR[™] technologies. Like the CRAFT-STAR[™], the COMPACT-STAR[™] can be configured with our unique Whirlpool/wort kettle, and accommodate both infusion and decoction mashing regimens, so you can process any recipe and ingredients without a hitch. Upgrade to our MILLSTAR[™] wet milling system and you can increase throughput to up to 12 brews in 24 hours.

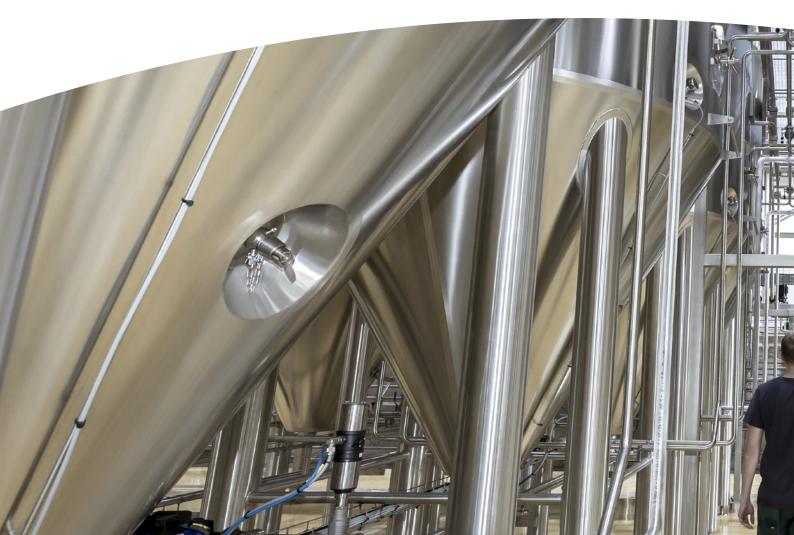
GEA doesn't just sell equipment and processing solutions. We partner with every customer to deliver a complete package, from design and configuration, to delivery, installation, commissioning and automation. And by choosing one of our tailored service, maintenance and upgrade packages, you can be confident that wherever you are in the world, every item of GEA equipment will give you peak performance for the complete lifespan of your plant.

Smart Processing for the Cold Block

Choose GEA's flexible piping solutions, dry hopping equipment and multifunctional centrifuge skids, to support all your processes, maximize product yield and save production time.

GEA equipment and solutions for the cold process area give craft brewers the freedom to develop new flavors and aromas. From fermentation and maturation tanks to bright beer tanks, yeast management and next-generation dry hopping systems, GEA's intelligent equipment will optimize your process for every brew, whatever your style.

Our flexible piping solutions and skid-mounted processing equipment are designed to support your concepts and setup, whether your cellar is a manual operation with standalone units or fully integrated with your brewhouse. Space-saving piping solutions connect all your equipment, help to save resources and improve process efficiency. Choose between hoses, ring pipe, pipe fence and our fully automated ECO-MATRIX[™] system for any plant layout. With GEA piping you have the flexibility to add new tanks and process skids to expand or diversify.





GEA has developed advanced dry hopping technology to meet any budget. For specialty and craft breweries with lower cast-out volumes, a manual hose-piped solution will provide optimum flexibility for adding hops to brew kettles and storage tanks. We also offer the fully automated HOPSTAR[™] Dry system. Our dry hopping solutions give our customers almost limitless options for creating new flavors.

For the removal of hot break GEA offers the proven whirlpool technology. For brewers who are creating brands that require high pellet dosings we also can integrate our multifunctional GEA 'plug & win' centrifuge skid. These units are ideal for treating the hot break as well as the green beer.

GEA processing solutions for the cold process area are configured with cleaning-in-place (CIP) plants so you can be confident of thorough, efficient cleaning of all your equipment, vessels and pipes. As well as reducing equipment down time, GEA CIP systems save on energy, water and detergents, and free operators for other tasks.



GEA HOPSTAR™ Dry



GEA WORTSTAR™ Craft



Skid-Mounted Equipment for Flexible Craft Brewing

GEA offers versatile, high-quality skid-mounted equipment and systems so that craft breweries of any size can be inventive with their recipes, grow and diversify to succeed in their markets.

GEA Process Skids

At GEA we understand that every craft brewer is an individual. Your ingredients, recipes and processes are what make your brands unique.

We develop innovative tools and equipment that will let you develop new ideas and products and maintain your competitive edge. Our versatile, skid-mounted systems fit in with any process, while saving space, and giving you the flexibility to test new processes, diversify and expand.

Optimum wort aeration for top quality beer

GEA developed the semi-automated WORTSTAR[™] Craft wort aeration technology specifically for craft brewers. The system features annular gap nozzle technology that generates very fine air bubbles, to ensure maximum oxygen uptake and gentle wort treatment. You can be confident of consistent, predictable fermentation to give you top quality beer, every batch. Supplied pre-assembled, and with CIP cleaning and nozzle steam sterilization as standard, the WORTSTAR[™] Craft is an ideal match for the CRAFT-STAR[™] and COMPACT-STAR[™] brewhouses.

Innovative dry hopping system for full flavors

The skid-mounted, fully automated HOPSTAR[™] Dry is a unique dry hopping technology for extracting the richest, fullest flavors from hop pellets and hop cones. But why stop at hops? The system is equally at home processing citrus, herbs or other ingredients, so you can create exciting new products with intense flavors and aromas.

Offering a step above traditional dry hopping equipment, the fully programmable HOPSTAR™ Dry features a customized agitator system that optimizes hop oil extraction, but reduces sludge and beer loss by minimizing transfer of hop solids into storage tanks.

Install one HOPSTAR[™] Dry to serve multiple storage vessels, and benefit from hygienic design, fully automated CIP, and the highest quality materials and constructions.

More beer from each brew with GEA 'plug & win'

GEA 'plug & win' multifunctional centrifuge skids represent the perfect tool to make your brewing setup more efficient, flexible, and faster. With the all-in-one installation, you get an intelligent system for every separation and clarification process, both before and after fermentation. Replace kieselguhr filtration, recover valuable beer from tank bottoms and efficiently and gently clarify hot wort and green beers.

Minimized oxygen pick-up, gentle product handling, and automated CIP will ensure top product quality and hygienic operation. GEA 'plug & win' is available in four versions.



Efficient downstream processing

For efficient, reliable downstream processing, GEA offers versatile water deaeration, carbonation and blending systems. Our technologies have been developed to ensure consistent properties and characteristics every batch.

The VARIDOX[™] family of deaeration systems has been designed specifically for the brewing industry, and offers both cold and hot water deaeration. The column technology uses carbon dioxide and nitrogen strip gases to absorb unwanted dissolved gases from brewing water, but with minimal loss of carbon dioxide. Supplied ready-to-install, the space-saving, energy-efficient VARIDOX[™] skids can be easily integrated into your existing process line.

GEA's DICAR-BTM technology promises precise carbonation of beer and beer mixed beverages. The compact platform features an in-line CO_2 meter and user friendly operator control panel and display.

GEA has developed the in-line DICONTM technology for mixing and blending liquids directly in the pipeline, so a mixing tank isn't needed. Featuring precise flow meters to ensure high mixing accuracy, the DICONTM technology is used by both craft breweries and large-scale producers for final quality adjustment as well as for processing beer mixed beverages.

Utilities for high quality products

GEA technologies are designed to offer robust, long-term solutions for the safe, reliable operation of your craft brewery plant today, and as you grow and expand. As well as supplying end-to-end process plants, we offer a world-leading range of utilities solutions for all stages of your processes. Our range of energy-saving utilities spans cooling and compressed air technologies, and refrigeration plants, along with carbon dioxide recovery systems, and steam supply. We can also configure water treatment plants to help save and recycle water, and keep your brewery environmentally sustainable.

We also understand that no two breweries will have exactly the same requirements. GEA experts configure utilities solutions to meet all your process needs, output, size, and product range. But we don't stop there. We can tailor top performing utilities solutions to match your local environmental conditions, from water and air temperature, to altitude.

GEA solutions are all developed to minimize the need for service and maintenance, so your costs are reduced, and off-time is kept to a minimum. And because we build reliability into all our equipment, our customers can focus on brewing top quality beer.





GEA Service – For your continued success.

GEA Service offers dedicated teams of service experts. Our focus is to help our customers build, maintain, and improve their performance, market presence and competitive edge for the entire life cycle of their plants and equipment.

Partnering with GEA gives you the benefit of our worldrenowned, customer-tailored service and recommended spares upgrade, modernization and optimization services. With our support you can be certain that every piece of GEA equipment and technology in your craft brewery will operate optimally from day one, and for its complete lifespan, to give you maximum return on your investment.

- Getting you started Seamless support for instant productivity and performance
- Keeping it running The cost-efficient way of ensuring maximum safety and reliability
- Constantly improving Sharing our knowledge to safeguard your investment
- Together with you Our enduring commitment to you and your business



We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA is a global technology company with multi-billion euro sales operations in more than 50 countries. Founded in 1881 the company is one of the largest providers of innovative equipment and process technology. GEA is listed in the STOXX® Europe 600 Index. In addition, the company is included in selected MSCI Global Sustainability Indexes.

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