

Hard sweet biscuits and crackers



GEA Comas and GEA Imaforni join forces and become GEA Bakery

GEA Bakery provides high quality turnkey solutions for a wide range of applications in the baking industry.

GEA Comas, located in the north-eastern part of Italy, has been present in the market for 50 years assembling lines for cakes, biscuits, pizzas, crackers and many other baked goods. Working with customers all over the world, the company has been offering custom-made solutions to satisfy even the most demanding needs.

GEA Imaforni, born in 1962 outside the city of Verona, has been designing and producing ovens for local, seasonal and uniquely processed bakery products. By working hand-in-hand with its customers, GEA Imaforni has been developing special configurations that are specifically designed to meet the requirements of the product, offering great flexibility in all technological solutions.

By joining forces, the two companies now form the GEA Bakery division, which provides industry-leading equipment and complete production lines for a wide range of applications in the bakery industry, with 100 years of combined experience. Thanks to its proprietary technologies and full line integration capabilities, the Bakery division provides turnkey solutions for a wide variety of applications, such as: cakes, cookies & biscuits, pies & tarts, frozen layer cakes, pizzas, breads & pastries, and crackers.

GEA expertise and solutions span every stage of bakery product processing, from ingredients reception and bulk handling, to liquid and powder processing, control systems, refrigeration and the final packaging.



GEA engineering for
a better world

Biscuits and crackers applications

The versatility of GEA Bakery production lines.

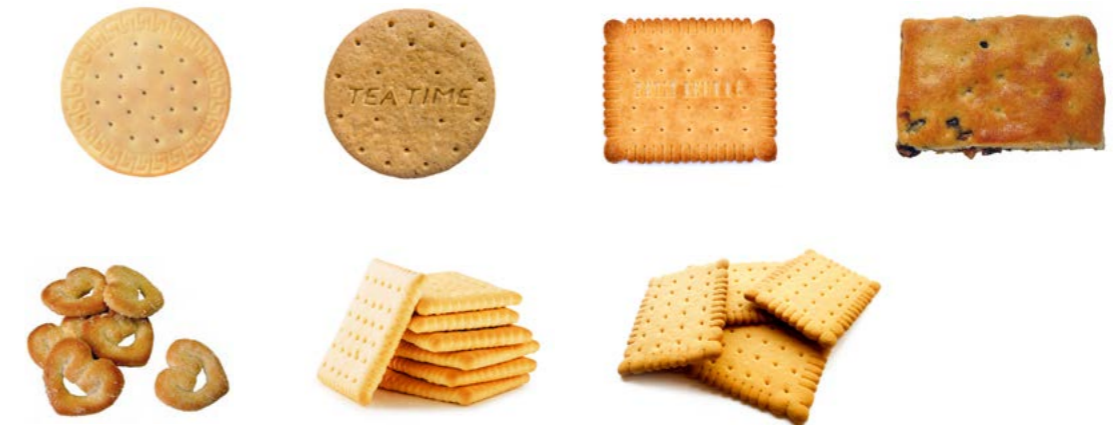
GEA is a worldwide leader in the baking industry, supplying lines with production capacities ranging from 500 to 2000 kg/h. Whether you are looking for a specific cracker or biscuit, GEA can provide you with complete baking solutions that will cover your production necessity. Thanks to the combination of established know-how and innovation, GEA bakery lines can produce crackers, snacks and hard dough biscuits of any kind and shape.



Crackers



Hard biscuits



Snacks

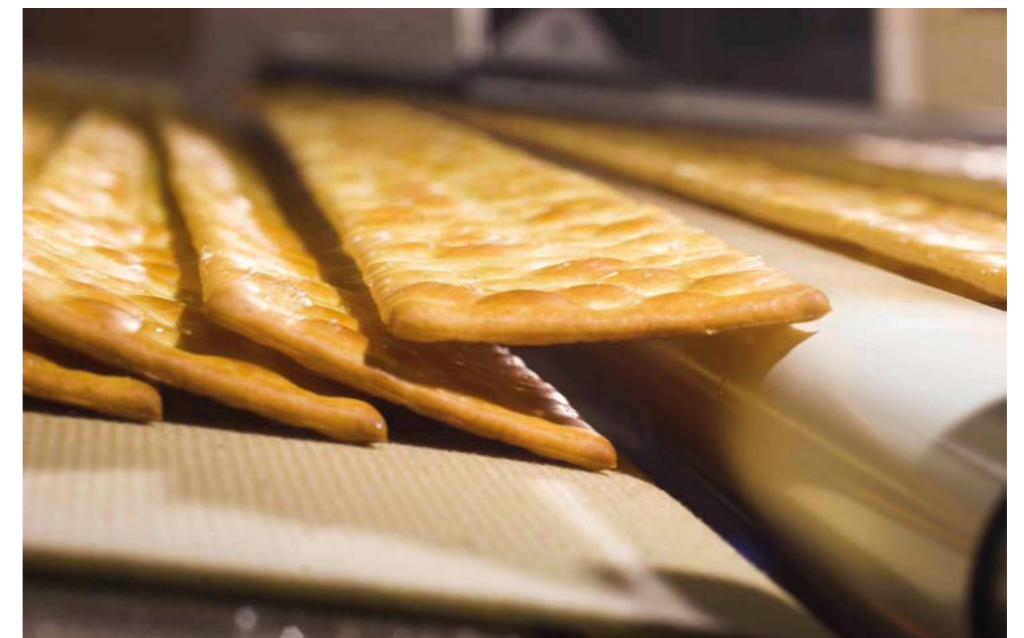


Bridging the gap between quality and repeatability

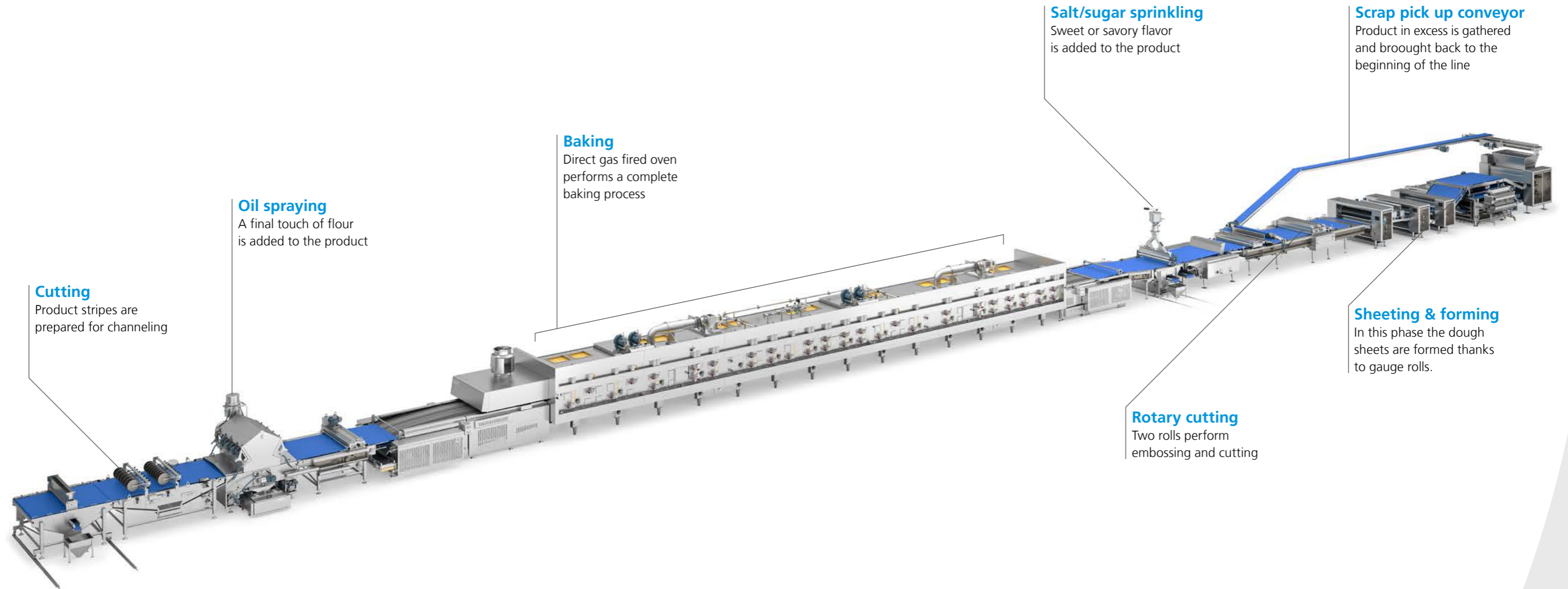
Obtain the perfect dough structure and texture of crackers and biscuits.

Achieving top product quality requires a combination of the right recipe, and optimum processing and baking systems. Here at GEA Imaforni we understand that gentle handling and processing of the dough sheet are the key ensuring the optimum dough structure and texture. We have used our industry and technology expertise to develop equipment that doesn't stress the dough, so our customers can be confident of the quality and consistency of their final products. GEA Bakery designs, configures and installs complete lines for hard sweet biscuits and crackers, which are manufactured on forming lines that comprise a sheeter and a set of gauge rolls. Processing soda or cream crackers also requires a lamination stage. Biscuits are cut into shape using a single, or dual roll

rotary cutter. We also configure scrap pick-up and return conveyor equipment to reuse the scrap dough and minimize waste. Sheeting lines can be supplied in widths up to 2000 mm. GEA Bakery lines are designed and configured to ensure that biscuits can cool slowly, which helps to reduce the likelihood of 'checking', whereby products develop hairline cracks. We also offer product stacking solutions that can be configured to fit into just about any space or layout, so capacity and throughput aren't compromised. Working with customers, GEA Bakery has designed optional equipment for biscuit and cracker lines, which give our clients the flexibility and freedom to be inventive with sweet and savory products. Our range spans units for sprinkling salt or sugar, applying an egg wash glaze, and ink printing.



Biscuits and Crackers processing





Cracker processing line
up to 2500 kg/h capacity

Mixing

Gentle creation of the perfect dough.

GEA Bakery works in close collaboration with our industrial partners and customers to develop robust and reliable mixing solutions for hard dough. Our engineers configure hygienic systems that integrate perfectly with upstream and downstream processes, and comply with the most stringent safety standards.



Horizontal mixer

The horizontal mixer is suitable for biscuit, cracker or fermented doughs. With this system the main ingredients are commonly fed automatically from the top, while minor ingredients can be added manually. Both single, or double 'sigma'-shaped shaftless mixing arms can be configured.



Vertical spindle mixer

The vertical spindle mixer is often used for cracker doughs. The equipment can be configured with either two or three vertical arms, dependent on the production capacity.

Dough feeding

Careful handling of the mixed ingredients through the feeding system ensures consistent quality and repeatable down-stream processing.

GEA offers a range of dough feeding systems in different sizes to meet the specific production requirements, capacity and product composition. Each system can be configured to handle different dough textures and viscosity and also to match the available space and plant layout. Our engineering staff ensures that our dough feeding systems perfectly integrate with our production lines to ensure end to end performance is matched.

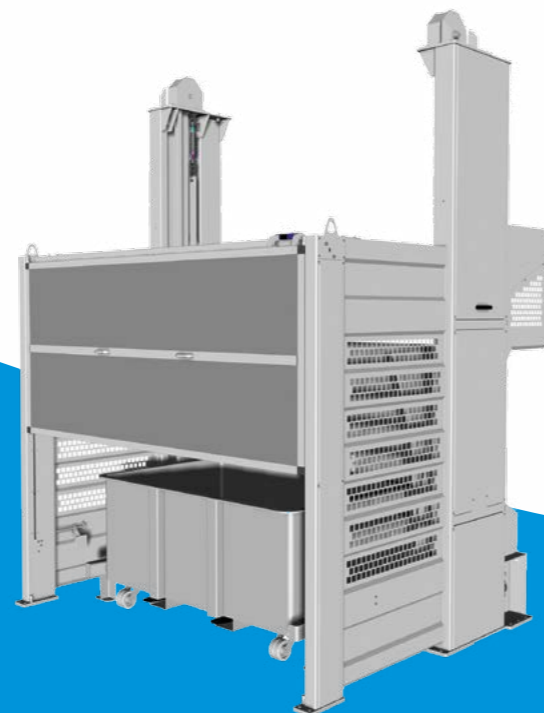
GEA dough feeding technologies can be designed to include ground-level tub-lifting and tilting systems. We can provide units that comprise an overhead hopper and a pneumatic guillotine, which are ideally suited to feed hard sweet biscuit or cracker dough, as well as soft cookie dough. We can also configure systems with pocket rollers that directly portion the dough. Options include metal detectors on exit conveyors to ensure optimal product safety and dough crumbling technology to break up lumps that may

have formed in the dough during mixing.

All GEA systems are designed to comply with the most stringent food safety and hygiene requirements.

The vertical tub elevator lifts the tub with the dough to a predetermined height and tilts it into the hopper of the dough feeding system which is located downstream. Dough feeding systems for hard sweet-biscuit or cracker dough (but also suitable for soft dough cookies) comprise a tub tilting device, dough feeding machine with pneumatic guillotine and metal detector on the outfeed conveyor. To optimize the production process it is possible to use a dough feeding system which is configured with pocket rollers to create dough portions prior to conveying to the forming machines.

All GEA systems have easy access for cleaning and with high quality food grade materials used in all product contact parts.



Ground floor tub tilting system



Dough feeding system for hard sweet biscuits and crackers, also suitable for soft dough cookies. It features a tub-tilting device, and dough feeding machine with pneumatic guillotine and metal detector on the outfeed conveyor.



Precisely engineered pocket rollers in a dough-feeding system.



Sheeting & Forming

Flexible sheeting technology that can handle different viscosities of dough.

GEA offers modular forming units that can be tailored to meet any processing or production requirement. We can configure both horizontal and space-saving vertical systems that include the desired number of gauge rolls. Pressure gauge units automatically adjust the feeding roller speed to ensure uniform dough weight passing through the rolls. The range of technologies offered by GEA encompasses versatile cut and sheet lamination systems, rotary systems for embossing and cutting, and scrap pick-up conveyors.

GEA also offers auxiliary equipment including depositors for distributing ingredients between dough sheets, sprinklers for sugar or salt fitted over recovery conveyors, ink printers and soda bath units. During the sheeting process, the dough is gradually reduced in thickness as it progresses from the first sheeter to the final gauge roll.

Depending on the type and texture of the dough to be processed and on the space available, different solutions can be offered: at the head of the line either a Three Rolls Sheeter or a Four Rolls Sheeter can be installed. GEA sheeting lines guarantee consistent, uniform and stress-free sheeting. Automated control systems optimize all working parameters and fine tune working conditions without the need for manual intervention. The control systems adjust the speed of each unit in the cascade to ensure that the correct mass of dough enters each stage, to guarantee high production standards and reliable performance. All working parameters and operating conditions are displayed on the user interface. Most brands of PLCs can be provided to meet customer requirements, and facilitate user-friendly operator interaction with the control system and machines.





Four roll sheeter

The system features a pressure gauge in the compression chamber, which automatically adjusts the speed of the feeding rollers in order to give consistent density to the dough sheet. This system is built to include 400 mm ground clearance, making it easy to clean under the machine.



Rotary cutting unit

Rotary cutting unit including two rolls, one for embossing, one for cutting. The system is raised off the ground with plenty of clearance to ensure accessibility for cleaning.



Relaxation web upstream of dough cutting





Auxiliary equipment

Customize your line for flexible productions.

GEA Bakery lines can be equipped with auxiliary machines dedicated to the addition of flavors such as sugar, salt or fats. These pieces of equipment can be placed along the line to create different versions of the same product. The ink printer is used to decorate hard dough biscuits: the solution composed of caramel and water is gathered from the ink roller and stamped on the biscuits giving them a new look according to the kind of mould mounted on the printing roller.



Detail of salt sprinkles distributed on crackers



Fat distributor

The Fat distributor is used to dose a mix of flour and fat inbetween the sheeted dough. Specifically used for cream crackers, the mix provides the nutritional features of the product, along with the cream cracker characteristic taste and crunchiness.



Ink printer installed between the rotary cutter and the scrap pick-up conveyor

Space-saving systems

Reduce plant footprint thanks to flexible and versatile solutions.

GEA Bakery can configure space-saving solutions that don't compromise on quality or functionality. Our engineers have designed a system that combines rotary cutter and rotary moulder forming line, but in a small footprint. To make the most of available space, the system comprises a four roll sheeter and two sets of gauge rolls in a vertical configuration, followed by a rotary cutter/rotary moulder, combined in the same unit. The smart design makes it easy for the line operator to switch quickly between soft and hard dough processing.

The modular forming units can be configured to match the needs and layout of each bakery. Although space-saving designs are built to offer a smaller footprint, they are constructed using the same, high quality materials, and to offer the same standards of reliability, hygiene, speed and product handling control as larger units.



Sheeter and gauge rolls

in vertical configuration, followed by rotary cutter/rotary moulder, scraps pick up conveyor and salt/sugar sprinkler unit.



Rotary cutter/rotary moulder machine equipped with a washover device

Control systems

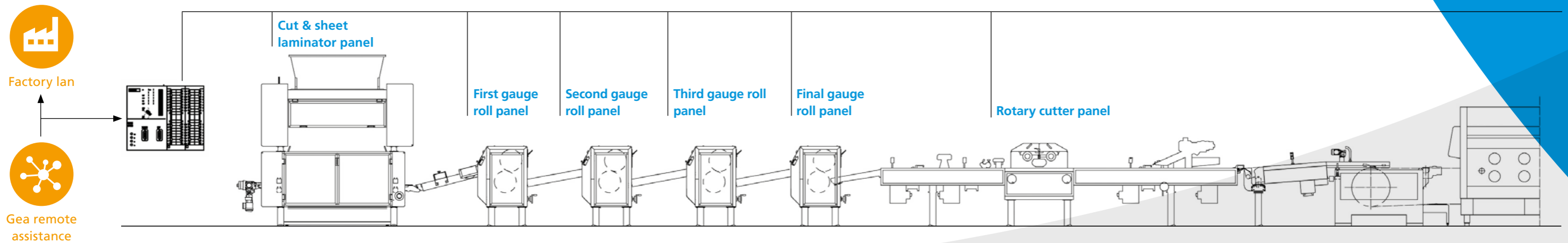
State-of-the-art technology to ensure flawless production.

The control system of the sheeting line is fundamental for high and efficient production standards. GEA Bakery can tailor an efficient, reliable cascade control system for all working motors, which guarantees a uniform, stress-free dough sheet and final products with a consistent thickness and dimensions. The dough sheet loop control system, introduced by GEA Bakery, comprises a sensor that detects the loop created by the dough sheet as it enters the nip of the final gauge roll, and automatically adjusts the speeds of upstream equipment.

This level of control means that the mass of dough fed to the nip of the final gauge roll remains constant. Automated monitoring and control occur through a network of digital signalling and information exchange. There is no need for manual intervention, and constant monitoring and control means any adjustments are made immediately when required. All parts of the control system and wiring comply with international regulations.



Automatic dough sheet loop control system
 GEA Imaforni has developed an automated control system to ensure a constant tension in the dough sheet as it enters the nip of the final gauge roll. No manual intervention is required, and customers can be confident of improved consistency and quality of the final product.





Baking

Hybrid solutions for flexible applications.

Hybrid oven

Flexibility is key in satisfying market trends, especially for products such as cakes that are subject to continuous changes in consumers tastes.

This leads GEA Bakery's customers to produce a wide variety of products, exploiting their lines' capabilities in the best ways possible. This is where hybrid ovens play a fundamental role. Depending on the type of product and its baking requirements, hybrid ovens are divided into sections with different types of heating systems: direct gas fired and direct

convection or cyclotherm and indirect convection. Such ovens ensure great flexibility in the baking process, since different products requiring different baking profiles can easily be process in the same ovens. Moreover, they offer a much better fine-tuned control of the final moisture content of the products with consequent reduced risk of "checking effects" on biscuits and improved crispiness, texture, uniformity of color across the entire width and higher final output.



Inspection window

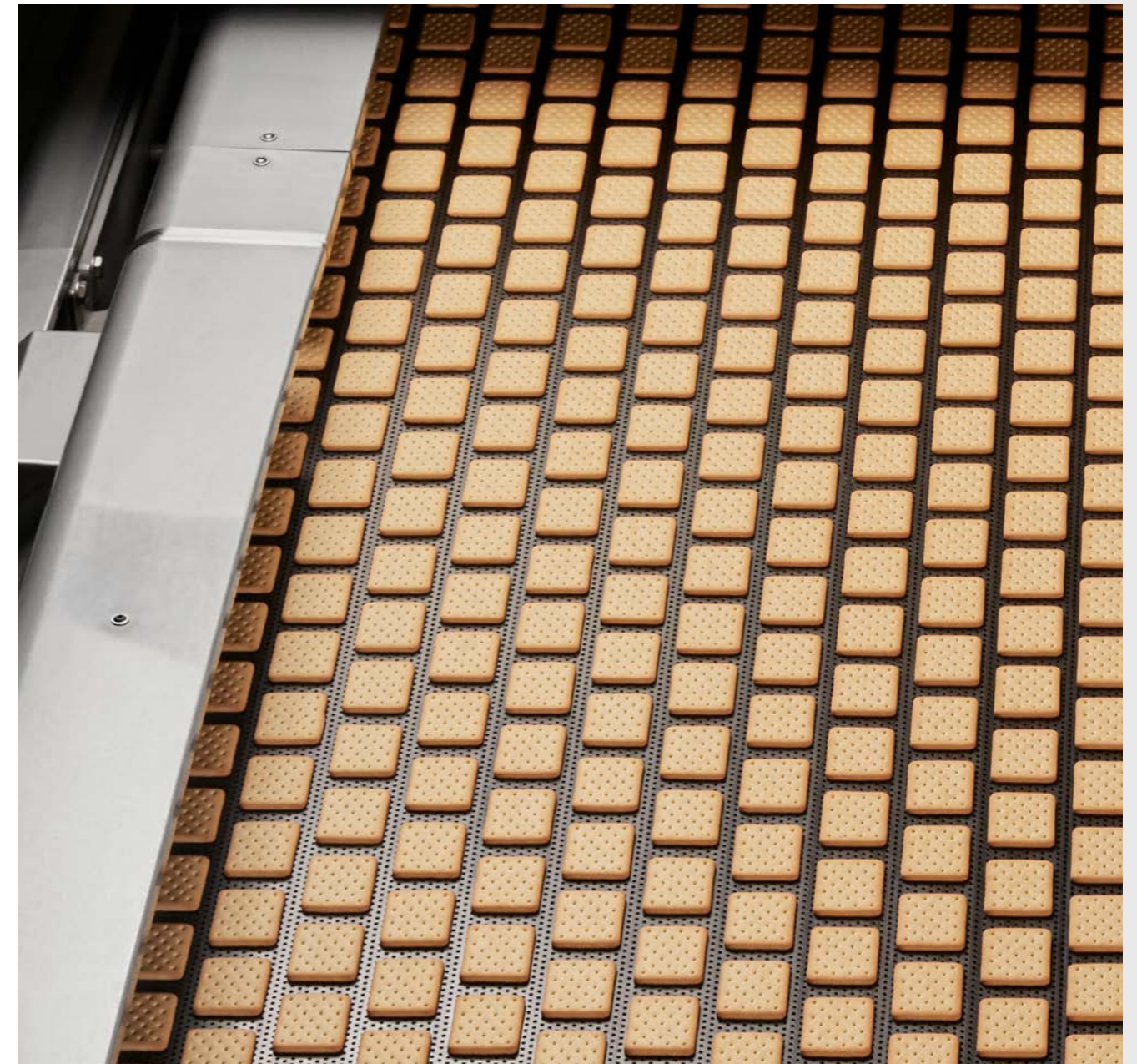
Alongside the oven several windows are placed allowing for inspection of the product during each baking phase.



Hybrid oven - Direct gas fired zone



Hybrid oven - Indirect convection zone



Hard sweet biscuits exiting oven
on perforated steel band



Oil spraying & cooling

Giving the final touch to the finished product.

After baking the product is treated with dedicated oil, which is sprinkled via spinning wheels to obtain the finest spraying and even distribution. This system ensures precise control of the quantity of oil used to avoid any waste. The oil tank is mounted on wheels and thanks to fast electric connection, it can be extracted and moved for easy cleaning. The oil filter features two separated openings, to allow for cleaning during production with no need for machine stops.

Baked biscuits and crackers need very gentle handling during and after cooling as they are transferred to the wrapping and packaging stations. GEA Bakery can supply the most suitable cooling systems, whether curved or straight, together with oil sprayers and stacking systems, so that the biscuits or crackers are conveyed in perfect condition. Our systems can be tailored to product and packaging format, as well as to throughput and the available space and layout of the building.



Crackers exiting oven



Different cooling configurations can be displayed according to plant layout, in order to minimize the overall footprint of the line.

Product handling

Preparing the products for final packaging.

Experts at GEA Bakery have the key know-how to configure cooled product handling and conveying to the packaging machines, in a safe efficient and reliable way. Products en route to packaging are typically either aligned and channelled, and then separated to create single portions, or diverted in guides towards systems that automate product stacking. Strips of crackers, for example, are aligned and then passed through a set of top rollers, where they are gently separated into single portions. Biscuits might be diverted both longitudinally and transversely to be forwarded to the next stacking stage. GEA Bakery has developed two stacking

systems that can handle any type of biscuit or cracker prior to packaging. The star wheel system is commonly used for lines that process products of similar size and thickness. This system uses a rotating, star-shaped shaft that turns them on their ends, onto a separate conveyor. Stacked products can then be transferred, using automated loaders, onto the wrapping system. The penny stacker is more flexible and can handle a wider range of products. This unit comprises a set of conveyors that run at different speeds. This speed differential causes the products to overlap as they pass from the faster conveyor to the slower conveyor.



Top rollers gently break the strips of soda crackers to create single portions.



Channeling board and penny stacker



Stainless steel inclined chute aligns the crackers between guides, in advance of a star wheel type stacking system.



Star wheel-type stacking system for biscuits

GEA Bakery Experience Center (BEC)

The GEA Bakery Experience Center (BEC) consists of technological and testing labs where various production tests are carried out.

GEA skilled personnel assist and guide customers to choose the technology and production processes that prove to be the most suitable for each particular product, using data gathered from specific machines. The BEC provides research and development trials on new products for customers and pre-tests lines prior to shipment.

The GEA Bakery Experience Center labs are available both in GEA Comas and GEA Imaformi facilities with selected equipment and technologies that simulate complete production processes. Our expert food technologists are available to support customers in finding the best production processes, develop new recipes and improve existing ones, with special attention to enhancing shelf life and product quality.



Service

We work alongside our customers in close partnership, supporting them throughout the entire life cycle of their equipment and solutions ensuring lasting business success.

To keep your plant operating at optimum performance, and to ensure your continued success, it needs to be maintained.

That's where GEA Service comes in.

Thanks to integrating the latest automation and control solutions, like remote assistance, the status of your bakery machines can be monitored by our automation engineers in real-time by ensuring precise and efficient support.

Working with GEA Service means partnering with a dedicated team of service experts. From project engineering, installation, and commissioning to maintaining and improving the performance of your bakery plant and equipment.

- Beginning of Life Services – Getting you started with seamless support for instant productivity and performance.
- Lifetime Services – Keeping it running with the cost-efficient way of ensuring peak safety and reliability.
- Extended Life Services – Constantly improving by sharing our knowledge to safeguard your investment.
- Consulting & Enhanced Operations – Together with you by enduring commitment to you and your business.



We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA is one of the largest technology suppliers for food processing and a wide range of other industries. The global group specializes in machinery, plants, as well as process technology and components. GEA provides sustainable solutions for sophisticated production processes in diverse end-user markets and offers a comprehensive service portfolio.

The company is listed on the German MDAX (G1A, WKN 660 200), the STOXX® Europe 600 Index and selected MSCI Global Sustainability Indexes.

GEA Comas

Viale dell'industria 12
36015 Torrebelticino, Italy

Tel +39 0445 660 222
Fax +39 0445 661 534

gea.com/contact
gea.com

GEA Imaforni

Via Strà, 158
37030 Colognola ai Colli
Verona, Italy

Tel +39 045 6174 711
Fax +39 045 6150 065

gea.com/contact
gea.com