GEA S-Tec spiral freezers and chillers

Hygienic food processing
Extensive experience in freezing and chilling for food processing

The GEA freezer portfolio offers innovative solutions for industrial freezing and cooling. Our solutions are designed to meet the stringent requirements of our customers – cost efficiency, long life cycles, energy efficiency, and customization.

Optimum freezing and chilling solutions
Ready meals, pizzas, shrimp, fish, hamburger patties, meatballs, sausages, chicken wings, chicken fillets, chicken nuggets, bread, sponge cakes, muffins, cookies, etc. Raw, par-fried, par-baked, or fully cooked products: rapid change in market demands and innovations in food processing have led to many product developments that require specialized handling. Our experts in frozen food applications ensure selection of the best solution for your products.

S-Tec spiral freezers and chillers are designed for maximum hygiene, high efficiency and reliability. We guarantee top-quality, hygienically safe products throughout your entire freezing or chilling process. How? By combining on our proven know-how in food freezing and chilling, with the ability to test your products in our technology center, we design and perform trial runs on the optimum freezing or chilling configuration for your specific application.
Energy-saving design for superior hygiene and reliability

GEA S-Tec spiral freezers are designed to match the needs of your product characteristics, facility space, and line layout.

Customized solution
- Modular configuration.
- Belt, floor, enclosure type options to match application requirements.
- Extended run-time from single shift to 14 days operation with GEA Snow Removal System (SRS) or Sequential Defrost (SD) options.

Safe product handling
- Open profiles and fully welded structure in product zone.
- Designed to answer to most stringent hygiene requirements with fully welded floor and enclosure options.
- Effective Clean-In-Place solutions from 2 zone cleaning to full recirculating option that acts like a giant dishwasher.

High yield with horizontal airflow
- Even airflow and temperature distribution across all tiers for best heat transfer and minimum product dehydration.
- High performance independent from product loading variation.

Low total cost of ownership
- Optimized evaporating temperature for minimum energy consumption.
- Simple drive system, non-proprietary parts, reliable structure for low maintenance costs.

S-Tec capacity range

400 mm usable belt width
COMPACT

400 kg/h Fully built, shipped, Plug-in ready

600 mm and greater usable belt width
MODULAR

600 kg/h Site built

700 kg/h 6,000 kg/h
Configurable solutions to meet product and plant requirements

The standard spiral belt mechanisms are defined by belt width, turn radius, number of tiers and tier pitch.

- Overall belt widths are available from 18” (460 mm) to 52” (1320 mm) to match typical processing lines for your application.
- Modules can be configured with a turn radius ranging from 1.7 to 3.2, to match space constraints and site footprint.
- S-Tec solutions can be supplied with 15 to 35 tiers, to cover a large capacity range.
- The tier pitch can be configured from 110 mm to 220 mm, to accommodate a wide range of product heights.

### S-Tec spiral standard matrix

<table>
<thead>
<tr>
<th>Overall belt width (inches)</th>
<th>18</th>
<th>26</th>
<th>32</th>
<th>42</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable belt width (mm)</td>
<td>400</td>
<td>600</td>
<td>750</td>
<td>1000</td>
<td>1260</td>
</tr>
<tr>
<td>Tiers range</td>
<td>13 to 24</td>
<td>15 to 35</td>
<td>15 to 35</td>
<td>15 to 35</td>
<td>15 to 35</td>
</tr>
<tr>
<td>Tier pitch range (mm)</td>
<td>110 to 130</td>
<td>110 to 220</td>
<td>110 to 220</td>
<td>110 to 220</td>
<td>110 to 220</td>
</tr>
<tr>
<td>Available turn radius</td>
<td>1,7 (1554)</td>
<td>1,7 (2245)</td>
<td>1,7 (2764)</td>
<td>1,7 (3627)</td>
<td>1,7 (4491)</td>
</tr>
<tr>
<td></td>
<td>2,2 (2012)</td>
<td>2,2 (2906)</td>
<td>2,2 (3576)</td>
<td>2,2 (4694)</td>
<td>2,2 (5812)</td>
</tr>
<tr>
<td></td>
<td>2,7 (3566)</td>
<td>2,7 (5761)</td>
<td>2,7 (7132)</td>
<td>3,2 (6828)</td>
<td></td>
</tr>
</tbody>
</table>

(n) = Drum size in mm

- models available with DDS option
Frozen meat, poultry and fish

S-Tec chillers and freezers use industry-leading horizontal airflow technology to surround every surface of the product.

Supporting innovative recipes and products
In today's global food marketplace consumers expect their supermarket fridges and freezers to offer tasty, high protein meal choices for busy lives. Fast food outlets and restaurants also expect the highest quality meats, poultry and fish for their recipes. GEAs performance equipment and solutions for forming, frying, cooking, grilling and freezing, has allowed our customers to develop innovative new processes and products to meet changing market trends.

Locking in freshness
Products that have been formed, coated and heat treated need to be preserved through chilling and freezing processes so that they retain quality. GEAs portfolio of S-Tec spiral freezers and chillers can be configured to match your plant layout, loading patterns and production capacity. Our technology uses horizontal air stream at a precisely controlled temperature to surround every surface of product, and ensure that freshness, weight, appearance and taste are retained. Designed to be space-saving and compact, GEAs S-Tec spiral freezers and chillers guarantee optimum hygiene, and are built around state-of-the-art refrigeration and freezing technologies to ensure reliability and efficiency, reduced freezing times and lower energy consumption. Our customers save on energy costs, time, and ultimately cost per kilo.

<table>
<thead>
<tr>
<th>Products</th>
<th>Typical product dimensions [mm] L x W x H</th>
<th>Typical product weight [g]</th>
<th>S-Tec 18 Capacity* [kg/h]</th>
<th>S-Tec 26 Capacity* [kg/h]</th>
<th>S-Tec 42 Capacity* [kg/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry</td>
<td>Nuggets, battered and breaded, par-fried, frozen</td>
<td>60 x 40 x 15</td>
<td>21</td>
<td>460-770</td>
<td>800-3,000</td>
</tr>
<tr>
<td></td>
<td>Tenders, battered and breaded, par-fried, frozen</td>
<td>102 x 25 x 13</td>
<td>29</td>
<td>480-800</td>
<td>900-3,100</td>
</tr>
<tr>
<td></td>
<td>Filets, battered and breaded, par-fried, frozen</td>
<td>140 x 90 x 19</td>
<td>115</td>
<td>410-700</td>
<td>750-2,700</td>
</tr>
<tr>
<td></td>
<td>Chicken patties, battered and breaded, par-fried, frozen</td>
<td>100 (Dia.) x 10 (H)</td>
<td>115</td>
<td>450-750</td>
<td>800-3,000</td>
</tr>
<tr>
<td></td>
<td>Nuggets, battered and breaded, fully cooked, frozen</td>
<td>60 x 40 x 15</td>
<td>21</td>
<td>380-640</td>
<td>700-2,500</td>
</tr>
<tr>
<td></td>
<td>Tenders, battered and breaded, fully cooked, frozen</td>
<td>102 x 25 x 13</td>
<td>29</td>
<td>410-690</td>
<td>750-2,700</td>
</tr>
<tr>
<td></td>
<td>Filets, battered and breaded, fully cooked, frozen</td>
<td>140 x 90 x 19</td>
<td>115</td>
<td>360-610</td>
<td>650-2,400</td>
</tr>
<tr>
<td></td>
<td>Chicken patties, battered &amp; breaded, fully cooked, frozen</td>
<td>100 (Dia.) x 10 (H)</td>
<td>115</td>
<td>380-640</td>
<td>700-2,500</td>
</tr>
<tr>
<td>Meat</td>
<td>Beef patties, raw, frozen</td>
<td>100 (Dia.) x 10 (H)</td>
<td>80</td>
<td>380-640</td>
<td>700-2,500</td>
</tr>
<tr>
<td></td>
<td>Beef patties, fully cooked, frozen</td>
<td>100 (Dia.) x 10 (H)</td>
<td>70</td>
<td>320-530</td>
<td>600-2,100</td>
</tr>
<tr>
<td></td>
<td>Meat ball, raw, frozen</td>
<td>Sphere 25.4</td>
<td>8</td>
<td>380-639</td>
<td>700-2,500</td>
</tr>
<tr>
<td></td>
<td>Meat ball, fully cooked, frozen</td>
<td>Sphere 25.4</td>
<td>8</td>
<td>330-550</td>
<td>600-2,100</td>
</tr>
<tr>
<td>Fish</td>
<td>Filets, raw, frozen</td>
<td>200 x 90 x 13</td>
<td>115</td>
<td>350-600</td>
<td>650-2,300</td>
</tr>
<tr>
<td></td>
<td>Fingers, battered and breaded, par-fried, frozen</td>
<td>100 x 32 x 15</td>
<td>29</td>
<td>600-1,000</td>
<td>1,150-4,100</td>
</tr>
<tr>
<td></td>
<td>Filets, battered and breaded, par-fried, frozen</td>
<td>130 x 102 x 18</td>
<td>180</td>
<td>650-1,050</td>
<td>1,150-4,200</td>
</tr>
</tbody>
</table>

* capacity figures are indications for basic estimation purpose.
Bakery products

GEA proofing, chilling and freezing technologies are designed to gently handle your bakery products to preserve shape, texture and colour.

Advanced technologies and specialist support

In the bakery industry, advanced technologies are required to ensure flawless product handling during the proofing, cooling, and freezing stages of the processing line. For dough, part baked bread, and pastry applications, the primary objective is to retain optimal product quality while preserving shape, texture, and color from proofing to freezing. Our application specialists can help you to select the cooling and freezing solutions that will best meet your product requirements.

GEA technologies offer many advantages:

• No damage to bread crust during the freezing process
• Shape preservation
• Minimum belt marking on the product

Our engineering experts consult with you to develop technical solutions that will guarantee maximum reliability and optimal performance, and match your production requirements. Our evaporators with highly efficient frost management systems and superior air flow technology, are designed to promise top product quality and efficiency. We can configure systems that allow up to six days of continuous production between defrost cycles.

<table>
<thead>
<tr>
<th>Products</th>
<th>Typical product dimensions [mm] LxWxH</th>
<th>Typical product weight [g]</th>
<th>GEA S-Tec solution</th>
<th>Product treatment</th>
<th>Capacity range and belt range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baked bread</td>
<td>260x90x70</td>
<td>450</td>
<td>S-Tec spiral ambient cooler. Single drum or twin drum</td>
<td>Cooling from +90°C to +45°C</td>
<td>1000kg/h to 3000kg/h with 26,32,42,52 inches belt width range</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S-Tec spiral freezer with sequential defrost for 6 days in operation</td>
<td>Freezing from +45°C to -12°C</td>
<td></td>
</tr>
<tr>
<td>Croissants</td>
<td>150x40x35</td>
<td>75</td>
<td>S-Tec spiral proofer with exact temperature and humidity control</td>
<td>Proofing. Adjustable temperature: 25°C to 40°C. Adjustable humidity: 70 to 90%</td>
<td>1000kg/h to 6500kg/h with 32,42,52 inches belt width range</td>
</tr>
<tr>
<td>Baguette</td>
<td>520x60x60</td>
<td>280</td>
<td>S-Tec spiral freezer with sequential defrost for 6 days in operation. Twin belt option for 2 baguette lines processed in one freezer</td>
<td>Freezing from +18°C to -18°C</td>
<td>1000kg/h to 3000kg/h with 26,32,42,52 inches belt width range</td>
</tr>
<tr>
<td>Cakes</td>
<td>Diam.285 x H45</td>
<td>2000</td>
<td>S-Tec twin drum spiral freezer with product infeed and outfeed at floor level</td>
<td>Freezing from +75°C to -12°C</td>
<td>1000kg/h to 5000kg/h with 26,32,42 inches belt width range</td>
</tr>
</tbody>
</table>
Ready meals

GEA can configure S-Tec freezing and chilling solutions for any type of ready meal, from in-flight dinners and prepacked sandwiches, to soup and pasta.

Perfect solutions for prepared meals

Ready meals became popular in the 1950s when families would gather round the television and eat ready-prepared ‘TV dinners’ on trays with peel-off lids. Things have come a long way since then, and the ready meals market is now focused on using fresh, healthy ingredients and recipes, with fewer preservatives, additives, salt and fat. GEA is offering a wide range of equipment for ready meal preparation lines including forming, slicing, cooking prior to chilling or freezing. GEA can configure the ideal S-Tec freezing and chilling solution for every type of ready meal product, from in-flight meals and sandwiches, to soups and pasta. Our technologies ensure that your products keep their quality, taste and appearance, whether packaged in containers with or without lids, in bags, trays, boxes or pouches.

Energy saving solutions

GEA chilling technology precisely controls and monitors the ambient temperature to prevent surface freezing. The horizontal airflow is more effective than vertical airflow for large trays, as all surfaces of the product container are evenly surrounded by air at the correct temperature. GEA freezers and chillers also offer optimum energy efficiency, so that our customers can be assured of cost savings, while improving environmental sustainability.

<table>
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<tr>
<th>Products</th>
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<th>Typical product dimensions (mm)</th>
<th>Typical product weight (g)</th>
<th>S-Tec 26 (kg/h)</th>
<th>S-Tec 32 (kg/h)</th>
<th>S-Tec 42 (kg/h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lasagne</td>
<td>Lasagne, post pasteurized, chilled</td>
<td>149x122x145</td>
<td>400</td>
<td>1000-3700</td>
<td>1500-4000</td>
<td>2500-6500</td>
</tr>
<tr>
<td>Meal tray</td>
<td>Meal tray, frozen</td>
<td>160x115x40</td>
<td>200</td>
<td>400-1400</td>
<td>700-2000</td>
<td>1300-5500</td>
</tr>
<tr>
<td>Soup</td>
<td>Soup in pots, frozen</td>
<td>105 x H 140</td>
<td>600</td>
<td>1800-4000</td>
<td>2500-5000</td>
<td>4000-8000</td>
</tr>
</tbody>
</table>
Dairy applications

S-Tec freezer and chiller technologies ensure that every milk, cream and cheese-based food is processed at the optimum temperature to retain flavor and increase shelf-life.

**Precise temperature control for safe, tasty products**

GEA supplies both small manufacturers and industrial-scale producers with high tech equipment for homogenizing, separating, metering, filling, chilling and freezing all types of raw milk and milk-based dairy goods. Backed by decades of experience working with dairy processing industry, we design, engineer, equip and install complete plants. Processing safe, fresh-tasting frozen and chilled dairy products depends on hygienic equipment and reliable processes.

Consumers expect a wide choice of ice creams, cheese and yogurts for every day, and for those special treats. GEA chillers and freezers are designed to provide the exact temperature to milk-based products during every stage of processing, to preserve their texture and appearance. Our freezing technologies ensure that ice cream is frozen quickly and uniformly to form small ice crystals for perfect consistency. The temperature in our chillers is finely controlled and monitored to ensure that dairy products such as cheese retain their perfect form and texture.

**Improve shelf-life and reduce waste**

GEA's chilling and freezing systems ensure top product quality, which improves product shelf-life and reduces waste, while our energy efficient technology reduces energy use and costs. And of course, GEA's spiral freezer and chiller solutions meet the most stringent hygiene requirements. We construct our equipment with fully welded floors, enclosures and conveyors, together with full zone recirculating CIP (clean-in-place). The option of fully welded enclosures means that the equipment can withstand 70°C heat treatment for pasteurization.

<table>
<thead>
<tr>
<th>Products</th>
<th>Product treatment</th>
<th>Typical product dimensions [mm]</th>
<th>Typical product weight [g]</th>
<th>S-Tec 26 (kg/h)</th>
<th>S-Tec 32 (kg/h)</th>
<th>S-Tec 42 (kg/h)</th>
</tr>
</thead>
</table>
Modular configuration

Benefits for customers include fast installation on site, flexibility to adapt to space constraints, efficient, resource-saving cleaning and reduced maintenance.

Customized to specifications

GEA S-Tec spiral freezer solutions have been developed around a proven modular concept, and can be configured to fit in with any existing plant layout, capacity, and upstream and downstream processes. Available in standard belt widths to match typical food applications, S-Tec freezers can be supplied with the optimum turn radius, number of tiers and pitch to meet any process requirement, and are constructed to offer optimum hygiene and cleaning-in-place (CIP) options.
High hygiene and easy maintenance guarantees

GEA S-Tec spiral freezer solutions can be supplied with either chequerplate or fully welded flooring to match our customers’ hygiene and maintenance requirements. Chequerplate flooring offers a cost-effective option but for the most stringent hygiene requirements, or for long-term, maintenance-free operation, we can install fully welded floors.

The S-Tec fully-welded modular floor does not require floor heating and removes dirt traps with structure elevated on pins welded to the floor. The application of fully welded stainless steel enclosure panels removes the need for silicone joints, and so significantly reduces maintenance, as well as providing unmatched hygiene and ease of cleaning.
Process flow design

Comprehensive spiral configuration options for perfect integration in your processing line.

Every GEA S-Tec spiral freezer is designed to fit in with upstream and downstream processes and in accordance with plant layout and available space.

Freezer infeed/outfeed orientation, and spiral orientation can be configured to make your process lines seamless and efficient, and to ensure fast installation with less down time and with minimal disruption to the rest of the line.

Baked bread line with ambient spiral cooler and spiral freezer.
S-Tec freezers reduce total cost of ownership
All GEA equipment is designed for robust, maintenance-friendly operation. Industry-leading evaporator technology reduces energy consumption, and our configurable CIP options reduce water usage. Our spiral freezer technology is also constructed using non-proprietary parts that guarantee minimal maintenance over a 10 year period, which further increases cost-effectiveness. GEA customers can have complete confidence in the reliability of all our systems right from day one, and for the whole lifespan of the equipment.
Customer satisfaction is our main objective

Technology Center

Experienced product application team at your service

Our application experts can test your products using our in-house freezing test facility before you invest. Our Technology Center located in Bakel, The Netherlands, offers a wide range of Freezer and chiller equipment, and configurable air temperature and airflow conditions to match your processing needs.

We offer comprehensive hands on training and product test programs to support your operational requirements. Data collected during testing can be analyzed by our technology experts to help you to select the right process conditions for your product. We can even ship testing units to your site for product trials under the correct production conditions.
GEA Service – For your continued success

Working with GEA Service means partnering with a dedicated team of service experts.

Our focus is to build, maintain, and improve customer performance throughout the entire life cycle of the plant and its 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 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.

Made to the minute. Every hour, every day, with GEA Service.
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 listed in selected MSCI Global Sustainability Indexes.