

In Touch



## Refrigeration technology for fruit and vegetables

In touch – solutions for the food processing industry



Fruit and vegetables are tasty and healthy – but they are a delicate matter. And for this reason you should not leave to chance the careful temperature control and gentle product handling in the chilling or freezing processing lines of these sensitive foodstuffs. GEA Refrigeration Technologies makes sure that your foods will stay at the very top of the consumer’s shopping list, and that they will leave behind no bitter taste. After all: energy efficiency and environmentally friendly refrigerants enjoy absolute top priority with us.

### ° In touch with your processes and requirements

## Fruit and vegetables: vitamins fresh to the table of your customers

*For us, “in touch” means customer proximity in every respect. GEA Refrigeration Technologies stands for refrigeration solutions oriented as closely as possible to the requirements of our customers: cost-effective, long-life, energy-efficient, sustainable – and made carefully to order.*

GEA Refrigeration Technologies is synonymous with industrial refrigeration. Beginning as long ago as the late nineteenth century, it has been our business to cool processes and products, and to temperature-control goods being transported. Today, we apply a major share of our technology to the food and beverages industry, especially the field of fruit and vegetables. Since those days of long ago, however, this area of commerce has significantly changed. During the early twentieth century, consumers were forced to be content with the produce of the season that could be grown in their direct region. Thanks to advanced, faster modes of transport – and of course to sophisticated cooling, freezing, and logistics technologies – we can now select to our own heart’s desire among a highly diverse assortment of things to eat and drink. We can have Brussels sprouts in summer and strawberries in winter: and this goes without a great deal of effort, without having to dig deeply in our pockets.

It is especially deep-frozen food that makes it easy as pie to eat healthily and with great variety – without great specialist knowledge, sophisticated nutritional plans, or calendars of the season. Whether it’s crunchy green peas in summer or radiantly red raspberries in winter: the consumer is awaited during every season by a tempting diversity of fruit and vegetables that keep their freshness, color, flavor, shape, and vitamin content. In addition, frozen foods



make it easier for the growing number of us with allergies and food intolerances to adjust our diet to personal needs. Nutrition scientists can heartily recommend frozen foods. Countless studies have for many years proven that properly frozen vegetables are not only equivalent to their fresh counterparts with respect to vitamin content: it has indeed been evidenced that frozen vegetables in any case are superior to those foods that have been stored for days in refrigerators or that have been in transit for long periods. Deep-frozen foods also represent hygienically flawless products for the consumer, since microorganisms such as bacteria need above-zero temperatures to grow and proliferate.

But it's not only science that gives us the green light here. Even dyed-in-the-wool gourmets and star cooks increasingly go to the freezer area of the supermarket: they, too, value the freshness, availability, and the good taste of frozen fruit and vegetables. In the majority of households, to be sure, cooking and eating have by now considerably evolved. After a long and strenuous day at work, consumers now above all expect the preparation of a meal to be quick and easy. Health still remains high in their priorities, however. With chilling and freezing systems by GEA Refrigeration Technologies, you can be sure that all hygienic standards are met and that the cooling chain remains a simple matter from the organizational viewpoint.

Investment in good refrigeration management pays off: both for the company as well as for the environment. Experts estimate that, throughout the world, more than one-third of all perishable goods never reaches the consumer. Mushy fruit and wilted lettuce that find no purchaser rot on rubbish heaps and burden the environment with methane emissions. If sensible, energy-efficient cooling enables less to be thrown away, this also means that less has to be cultivated in the fields and later processed. This in turn lowers water and energy consumption. Our goal is not only to create long-lifetime and cost-effective solutions for you, but also energy-saving and environmentally protective applications. After all: what counts is a maximum of benefits under economic conditions, as well as a maximum of environmental and climate protection. With GEA Refrigeration Technologies, your products will remain on everyone's lips.

Whatever is involved – whether cooling of fresh goods, storage, cooling processes for further processing, or deep-freezing – our business demands a great deal of expertise, precision, and a fine touch. Carefully, thoughtfully, and with love of detail, our engineers work out the refrigeration technology to match each type of food.

More and more people feel overtaxed by private and professional demands – to such a degree that they have no time or desire for extensive bouts in the kitchen. It's no wonder that convenience products are booming. At the same time, consumers are once again paying greater attention to freshness and quality. Both of these trends offer immense growth chances for the food and beverage sector – if it is equipped with state-of-the-art refrigeration technology.

## ° Protective refrigeration for deep-frozen vegetables

### Individually quick frozen for freshness, form, and taste



*When vegetables are to be frozen, we like to count the peas. We freeze such products so as to optimally maintain their shape, freshness, and taste – and to kill pathogens. Or, we freeze the products to prepare them for further processing: for example, potatoes for French fries. For some vegetables or prepared meals, it is most effective to freeze the products directly in their packages – with our carton freezers.*

Most of us modern people of course lack the time and energy for contemplative strolling through local farmers' markets, with intensive snooping and assessment of goods on display. As a rule, we rush through the supermarket to get home on time. No wonder that convenience foods such as deep-frozen products are gaining in popularity. Consumers especially like to reach for frozen vegetables: their deep-freeze storage at home is full of peas, beans, cauliflower, and the like.

Deep-frozen vegetables do not need tedious cleaning or cutting. But, beyond convenience, these frozen products offer top quality and great vitamin content. In addition, it couldn't be easier to stock up for the coming days and weeks. Frozen goods can also be particularly easily portioned, for small or large appetites. This likewise makes it simple to sensibly manage valuable foods and to prevent wastage. To ensure that the customer can enjoy precisely these benefits, this means that vegetables should lie loose as "bulk goods" in their packages and not stick together. Toward this end, IQF (individually quick frozen) GEA Aerofreeze tunnel freezers are effective for all kind of vegetables and herbs. Gentle product agitation together with efficient heat transfer are key elements to assure product quality all along chilling and freezing processes.

Our customer Bonduelle in Estrées, France, for example, counts on the "individualizing" features of the IQF process. Bonduelle freezes and processes 35 metric tons of vegetables – every hour. At this plant, GEA Refrigeration Technologies has equipped three mutually autonomous machine rooms, each with four high-performance screw compressors, including economizers. The plant also operates one IQF freezer (10 t/h) as well as three spiral freezers (each with 2.5 t/h) – all from GEA Refrigeration Technologies. Spiral freezers transport the products on an endless conveyor belt through various levels from the bottom upward. These freezers literally carry their weight when the products are relatively heavy or even packaged. One decisive benefit of this technique: a lot of output on a small footprint.



Vezet places its focus on quality. This Dutch family enterprise processes only top-quality foodstuffs and pays exceedingly careful attention to hygiene in all stages of the production process. One further quality indication at Vezet: they use systems from GEA Refrigeration Technologies

## ° In touch with Vezet

# Refrigeration technology for processing vegetables and salads



**Components of the new ammonia refrigeration plant at Vezet B.V.:**

- ° Air treatment
- ° Air cooling
- ° Compressors
- ° Heat exchangers
- ° Control systems

The Dutch family company Vezet prepares a tremendous range of ready-to-eat salads, uncooked-vegetable mixtures, kitchen-ready vegetables for cooking and frying, fruit salads for office breaks, and much more. A critical factor for the production processes here is to store the fruits and vegetables at temperatures ideal for preserving their freshness. This demands the latest in cooling and freezing technologies.

With the aid of GEA Refrigeration Technologies, Vezet has converted its entire refrigeration of cold-storage rooms to energy-efficient systems operated with the natural refrigerant ammonia. Since production at Vezet runs around the clock, except for Saturday night and Sunday morning, it was necessary to replace the refrigeration plant without interrupting production. This was a challenge that was met only with good coordination with the customer and all other parties involved. The complex system at Vezet includes air treatment, air cooling, compressors, condensers, and heat exchangers – all tailored especially to the requirements of Vezet – as well as the latest in control systems to ensure a minimum of energy consumption.



Individuality is king. Customers expect that they can divide, combine, and store frozen products as they wish. For this reason, systems by GEA Refrigeration Technologies freeze with IQF quality (IQF = individually quick frozen). Gentle belt agitation together with optimum airflow ensures the highest IQF quality.

When it's a matter of buying ripe and full-bodied fruit, tedious checking and time-consuming selection of produce displayed on market stands and fresh-food counters is not everyone's cup of tea. Deep-frozen fruit has become well established among consumers as a welcome alternative, not least because modern refrigeration systems assure reliable quality.

### ° Crusting before freezing for delicate fruit

## Economically crust freeze berries without cryogenic freezing

*The crusting and freezing process is applicable to most products in the berry family.*

Purchasing of fresh fruit can demand a lot from even experienced shoppers. A lovely, glowing skin often conceals flavorless and watery aroma. Sometimes overripe fruit falls victim to fruit flies. Next time we shop, we feel wiser and pick out underripe and hard fruit and let them ripen at home. But then we find that storage conditions at home promote the immediate development from underripe to rotten produce.



Discouraged by such experience, more and more customers are helping themselves to the deep freeze at supermarkets – and are not disappointed. Advanced quick-freezing makes this possible. Manufacturers wash, cut, and pit sweet fruits and freeze them in the perfect stage of “eating ripeness”. Refrigeration halts metabolism, the fruit does not ripen, and the customer can enjoy the preserved, delicious taste without trouble and tedium. In the design of freezer systems at GEA Refrigeration Technologies, pleasing the palate is of course not the only concern: the customer can depend on the preservation of “inner values” such as vitamins. With the very popular berries, for example, it is primarily the antioxidative effects that protect human tissue shells from damage – effects not impaired by industrial freezing. Freezing of course takes place under careful observance of relevant standards of food and beverage hygiene.

As with peas and other vegetables, IQF quality is paramount with fruits as well. It is essentially this emphasis that ensures that the products enter the market as first-class bulk items, and that the consumer can take individual quantities, and even individual berries. Quick crusting before freezing is highly effective for fruits. Very delicate produce such as raspberries are frozen in two steps. Raspberries are crusted in a unique impingement freezer, followed by freezing finish.

The quick-crusting step process takes place at high velocity, with top and bottom air jets for high heat transfer and no product movement on the belt conveyor. Only very small ice crystals are produced inside the product. When the fruit thaws, the cell structure remains extensively undamaged, so that even fruits with delicate structure and high water content retain their form and consistency. In addition, this solution – recently developed by GEA Refrigeration Technologies – offers significant energy savings in comparison to conventional cryogenic systems. It effectively preserves the color, flavor, shape, and nutritive value of these tender fruits. The crusting and freezing process is applicable to most produce in the berry family.

*Sometimes GEA Refrigeration Technologies shock-freezes processed fruit to such a degree that it fully solidifies: but with good reason.*

*Quick crusting and a freezing finish allow the most delicate fruit to remain in good form after thawing. The consumer, too: if you eagerly and regularly select deep-frozen fruit, you do your body a favor. And don't forget the refrigeration of “liquid fruit” – here, we are also your ideal business partner.*

Fruit juices and lifestyle drinks such as smoothies are enjoying great popularity as morning waker-uppers, or as vitalizing vitamin kicks in the office. But consumers are also now selecting classical potato products with the same enthusiasm. Advanced, precise refrigeration technology is your guarantee that golden French fries or croquettes in crispy jackets cause eyes to light up – and not only your children’s.

## ° Refrigeration technology for a variety of products Fits lifestyle and follows trends



We usually don’t think much about where our orange juice comes from – we simply drink it. But it has often been underway for weeks – usually from Florida – which demands flawless cooling. A challenge for GEA Refrigeration Technologies: GEA has equipped many juice carriers with refrigeration systems. These freighters transport only direct juice and concentrate.

Direct juice is pasteurized and filled immediately after pressing. It is designated on its labels as “not from concentrate” (NFC). Today, however, the greatest share of orange juice is shipped in the form of concentrate, from which water and aroma have been removed. The process of concentration reduces its volume to around a space-saving one-sixth of the pressed juice. It is designated as “frozen concentrated orange juice” (FCOJ) and is transported at a frosty 14 °F / -10 °C. At its destination, water and aroma are returned to the concentrate. This variation of juice is accordingly cheaper at retail dealers. As part of growing quality consciousness and the higher standard of living of many consumers, however, the demand for direct juice is growing.



*In processing of vegetables and fruit – whether to juice, pureed products, or convenience meals such as French fries – refrigeration is a critical factor in all production phases.*

Direct juice, in addition to fruit pulp, is frequently an ingredient for smoothies. A typical juice carrier transports approximately 32,000 m<sup>3</sup> of juice per trip. This is equivalent to 32 million one-liter cartons. The juice – whether in fresh or concentrated form – is stored in stainless steel tanks on board. The juice is pre-cooled before being stored on board, after which systems of GEA Refrigeration Technologies go into action. These systems must ensure a temperature of 14 °F / -10 °C for the concentrated juice. Direct juice is stored just above the freezing point: a process in which precision is critical, since the juice must not by any means be allowed to freeze.

Normally, a double, indirect system provides the refrigeration: systems called ice packs cool a brine solution, which is pumped to the insulated cargo holds. There, air coolers refrigerate the air around the tanks. In new ships, GEA prefers the energy-efficient refrigerant ammonia. It is easy to implement the legal regulations that must be observed with this gas: for example, a separate and gas-tight compressor room. It is very difficult, or impossible, to observe such regulations in converted ships; as a result, other refrigerants (e.g., R404A) are applied in such cases.



Advanced, precise refrigeration technology is the guarantee for golden French fries.



## ° In touch with French fries

### Freezing for French fries & Co.

French-fry freezing tunnels typically handle capacities from 10 to 30 t/h, which amounts to an average of 6 million portions produced per day and per plant. French fries, at 392 °F / 200 °C in a deep-fryer, then proceed through a cooling and freezing tunnel that reduces the product temperature from 203 to -0.4 °F / 95 to -18 °C. Energy costs for freezing accounts for a large amount of the expenses arising for these deep-frozen potatoes. For companies of this size, methods for reduction of energy consumption are of course especially interesting. Cooling and freezing systems perfectly adapted to the various production processes – including predictive control systems provided by GEA Refrigeration Technologies – keep energy consumption to a minimum.

An example of a GEA Aerofreeze IQF tunnel for French fries can include various temperature zones from pre-cooling to freezing. The initial pre-cooling section includes a thermosyphon coil, which generally uses ammonia as refrigerant. After condensation in an evaporative condenser, the ammonia evaporates in the coil – which generates enough energy to cool the French fries from 203 to 122 °F / 95 to 50 °C, without the use of refrigerating compressors. This process is virtually energy-free! The following pre-cooling section includes a heat exchanger fed by water from the plant. During circulation in this coil, water is warmed from 59 to 71.6 °F / 15 to 22 °C while the French fries are cooled from 122 to 86 °F / 50 to 30 °C. This saves energy in the factory hot-water system. In addition, the waste heat produced during cooling and freezing in such plants can be used by heat-pump technology from GEA Refrigeration Technologies to heat water from 86 to 176 °F / 30 to 80 °C for use in other parts of the plant – resulting in energy savings of up to 30 %. For a production line for French fries with a capacity of 18 metric tons per hour, this means annual savings of around 500,000 euros.



The storage of apples in controlled atmospheres retards their ripening process, which allows consumers to enjoy tasty apples, pears, and other fruit throughout the entire year. South African apples are exported to the northern hemisphere from February to October.



Fruit and vegetables are often underway for days before they reach shopping bags. During transport and intermediate storage, there are immense cooling requirements – since vitamins begin to diminish directly after harvest. Proper cooling slows this impairment of vitamin value.

° So that good stuff arrives in good shape

## We are at your side: from harvest to fresh-foods counter



Apples are healthy, low in calories, and inexpensive throughout the year. We let these vitamin-rich snacks roll around in school rucksacks and office bags without much thought – after all, they look quite stable and robust. But appearances are deceiving apples are truly demanding when it comes to their storage.

The company Betko Fresh Produce of South Africa has good experience with the apple varieties Golden Delicious, Braeburn, Pink Lady, and Granny Smith. Betko cleans and sorts freshly harvested apples and stores them in special warehouses equipped with cooling systems from GEA Refrigeration Technologies. Betko stores them in crates in controlled atmospheres, in order to retard their ripening and aging processes. In these controlled-atmosphere (CA) storage facilities, measurement and control systems ensure a temperature range of 31.1 to 30.2 °F / -0.5 to -1 °C, with reduction of oxygen content of the air to a maximum of 2 %. Until now, Betko has installed 72 cold-storage rooms with capacity of 98,000 boxes of apples (each box has 500 kg). The refrigeration system features cooling duty of 2.8 MW.



In February, when apple warehouses in western Europe gradually begin to empty, South African apples begin their travels to the northern hemisphere. There they are sold on farmers' markets or at the fresh-food counters of supermarkets: for example, in Sainsbury's, Britain's popular supermarket chain. Sainsbury's operates a new distribution center in Pineham, England. This warehouse complex accommodates fresh fruit and vegetables on floor space of 49,238 m<sup>2</sup>, with a value of around 50 million euros. This of course also includes apples. Starting from this advanced logistics center, Sainsbury's delivers to 100 supermarkets in the region. The company has come up with a few ideas to improve its CO<sub>2</sub> balance. For example, Sainsbury's has installed a weighing system in the access road to the distribution center. When a vehicle slowly passes over this system, this produces movement in the weighing system that in turn generates power for the warehouse complex. GEA Refrigeration Technologies developed the entire refrigeration systems for this complex. They ensure temperatures at 34.7 °F / 1.5 °C for fast-cooling storage and 46.4 °F / 8 °C for the product warehouse. In order to observe the strict ecological requirements for this supermarket chain, the refrigeration systems employ the natural and efficient refrigerant ammonia. Waste heat from a cogeneration power plant drives the absorption refrigeration plant at the complex.

*Each year, Betko Fresh Produce sorts and packs around 50,000 metric tons of apples, of which 75 % are exported.*

Our products are not simply products. They are also solutions for the problems that you face. We present you with a great number of pre-defined as well as individually configurable solutions. This enables you to find the optimal configuration for your application – one that balances out expenses for planning and equipment installation, functionality, as well as investment and operational expenses.

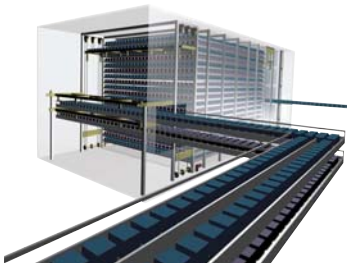
## ° GEA refrigeration technology for fruit and vegetables

### Our products for your products



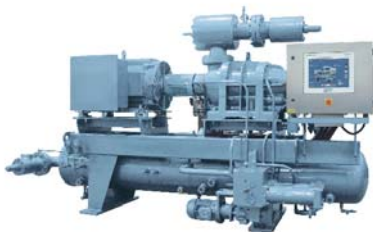
#### Valves and fittings

They are inconspicuous at first glance, but immensely important at second: the most suitable valves and fittings. They are matched to their particular application – and not only with regard to maximum permissible pressures. The response behavior of the GEA AWP valves, the resistance of the components to the media used and to external influences, and a great number of additional functions and features mean that these small components make a major contribution to the service life and the safety of your systems.



#### Carton freezers

GEA Intec carton freezers are designed for chilling and freezing products packed in cartons or totes. GEA Intec freezers can deliver your product from your production line to your loading dock, while achieving optimum product quality and minimizing labor and operating costs with fully automated systems. From automated product recognition at freezer infeed, Intec systems accommodate a variety of product volumes and can provide multiple retention times and multiple temperature zones. Our carton freezer range handles capacities up to 40 t/h.



#### Packages and skids

Perfectly inter-coordinated compressors, including their complete periphery, on stable, low-vibration frames – these are the GEA packages and skids. With our package solutions for refrigeration, you can rest assured that everything has been well thought out for you at our factory. And you can also be satisfied over low installation costs, since the units are completely delivered on a package or skid – ready to be hooked up and plugged in.



#### Piston and screw compressors

With its extensive offerings of GEA Bock piston compressors as well as GEA Grasso piston and screw compressors, GEA Refrigeration Technologies covers all normally encountered requirements placed on the provision of refrigeration for fruit and vegetable production. These functions begin with refrigeration directly after harvesting, include the production process itself, and extend to product storage in cold-storage and deep-freeze facilities. As varied as the temperature requirements for sensitive products may be, our components always assure that even easily perishable goods reach their consumers in outstanding quality.

### Spiral freezers

Adapted to discrete products such as spinach portions and ready meals, GEA Aerofreeze and GEA Eurotek spiral freezers and chillers handle capacities up to 7 t/h. In a homogeneous and efficient cold airflow, food products are conveyed on hundreds of meters of belt wound up in spiral for minimal footprint. Belt infeed and outfeed orientations are tailor-made for perfect integration into your processing line. Frost management systems, sequential defrost (SD) and snow-removal systems (SRS) can extend running time from 1 shift to 14 days of operation without stopping to defrost. Our clean-in-place (CIP) systems ensure comprehensive cleaning with reduced labor and water consumption. Our GEA Aerofreeze spiral freezer range is specially designed and built for the most stringent hygiene requirements and ease of cleaning with stainless steel fully welded structures, unit floors, and enclosures.



### Tunnel chillers and freezers

The energy-efficient GEA Aerofreeze chilling and freezing tunnels are the right solution for gentle handling of bulk products. The individually quick frozen (IQF) process assures that peas, berries, as well as French fries do not stick together. Optimum fan configuration assures matching of the airflow to light products to efficiently prevent product blow-off. Varying belt options and multiple temperature-zone possibilities flexibly handle any application for pre-cooling, chilling, freezing, crusting, and after-glaze hardening. GEA designers have placed great emphasis on hygiene: GEA Aerofreeze tunnels are built with fully welded stainless steel, including modular floor and enclosure. GEA Refrigeration Technologies offers a wide range of IQF tunnels from 0.5 to 3 t/h, with fully prefabricated machines up to 3 t/h and more, with modular pre-assembled machines.



### Control systems

Similarly to valves and fittings, control systems often remain unnoticed, since their performance cannot be measured in impressive kilowatt ratings or volumetric flow. But it can be expressed in intelligence – which helps to find the optimal operating point, to save energy, to determine machine operating times and capacity utilization, and to thus enable maintenance based on the operating state. Whether for individual units or complete refrigeration systems – we deliver the control systems that assure you maximum benefits.



The products named here represent only a small selection from our comprehensive portfolio. But this selection should make it clear that refrigeration technology has many facets for GEA. This enables us to assemble those products for you – from the correct standpoint and from the great options in our portfolio – that will optimally satisfy your requirements. In this process you will profit from tried and proven system components that are assembled to provide a harmonious overall solution, and to offer you what you are looking for: moderate investments, minimum operating costs, and maximum benefits.



Are you looking for a company that understands your sector in fruit and vegetables? A company that realizes the many and various demands that fruit and vegetables place on cooling and freezing technology, that knows the reliability demanded of each individual component, and that has full knowledge of what happens during harvest on the field and during further processing in a factory? Then you have come to the right place with us. We solve your refrigeration problems – just as individual as your business and as customized as your production facility. And we are not only at your side in the planning phase: we also take care of the project engineering, implementation, commissioning, and maintenance of your equipment.

° In touch with our customers

## With a view to your success

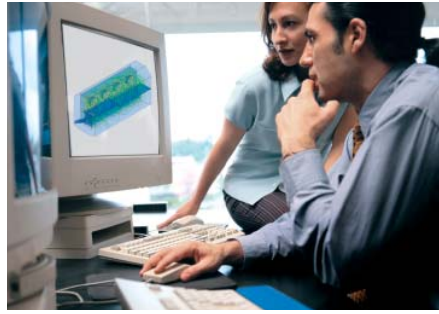
### Engineering

Delicate raspberries or rustic potatoes: storage and processing of your fruit and vegetable products cannot be implemented with standard solutions. Virtually all large refrigeration systems are thought out on an individual basis, so that your investments remain low and your benefits come out high. Nevertheless, in your factory, where every cubic meter is precious and many trades compete for space in cramped quarters, there is still the possibility of combining standard components in customized manner, and to arrive at a tailored solution. A solution that is optimally matched to your requirements with respect to investment, functionality, space requirements, a minimum of maintenance, and long life cycles. And, on top of everything, our solutions are energy efficient, to ensure thrifty application of valuable resources.

In dialog with our experts, you will soon realize that you are speaking not only to refrigeration engineers. You will see that your contacts at GEA Refrigeration Technologies for development and engineering speak your language and understand your sector. That promotes dialog with you, simplifies formulation of problems, and finally leads to implementation of safe and reliable systems that have been harmonized with the transport and production functions required. And, since we deliver complete measurement, control, and instrumentation technology in addition to the hardware, interface problems simply do not exist.

After signing the contract, our team will by no means leave you alone. It will support the set-up of your systems, as well as assembly and commissioning of your equipment. After all: we bear responsibility for the success of your business.





## Contracting and redesign

It is a paradox, but one of which we are well aware: even on the largest factory floor, space can be at a premium. This is why we help you to find the optimal solution and to arrive at optimal integration of the required technology in existing infrastructure – even without interrupting production. In many cases, enhancement of your benefits will also occur. This is because, for example, our systems require less space, allow completely different products to be frozen at the same time, and because they simply save energy. After all, we are well aware that special standards apply in work with foods and beverages. Place your trust in the experience of our engineers. They create solutions with a long view, to assure that your investments bring in maximal returns.

## Service

Harvest out on the field is coordinated with the weather, and depends not only on the calendar. In production of your fruit and beverages, you are at work not only during the week, but often on weekends as well. Preventive and restorative maintenance cannot therefore be concretely scheduled at prescribed intervals. No problem. We are there if and when you need us. And to ensure that down time remains at a minimum, we would be glad to flexibly plan your human resources as well. This flexibility will likewise be reliably supported by the mechanical engineering involved – which is why we place such value on low-maintenance, rugged equipment assemblies. And, if intervention should now and then become necessary to maintain the reliability of our equipment, we stand ready with advice for your staff and train them in the most important maintenance work for “in-between”.

## Spare parts

Whether as part of regular maintenance or owing to unplanned down time: even the longest-lived system now and then needs a spare part. And such parts must be available not only when you need them, but also where. This is why we have support points around the entire world that stock the normal wear, spare, and exchange parts from GEA Refrigeration Technologies for you. This means, for example, that minor repairs or maintenance won't become a major problem. To simplify logistics, we also pay attention as early as the machine-design phase that the same wear parts will be used in as many different modules as possible – which eliminates unnecessary proliferation of part types. For us, this means simpler warehousing operations at the service support points. For you, this enhances the chances of spontaneous availability and fast assignment of our service team. A win-win situation that saves both of us time and money.

### GEA Refrigeration Technologies works toward the following:

- Comprehensive consulting and responsible project support
- Great investment security
- Future-proof solutions
- A maximum of equipment operating time
- Long equipment life cycles
- Low energy consumption
- Minimal operating expense
- Highly competent service
- Fast spare parts delivery
- Climate- and environment-friendly technologies

*Would you like to learn more about us and our solutions?*

*On our Web site you will find contact details, our application and product brochures, and much more: [www.gearefrigeration.com](http://www.gearefrigeration.com)*

*Please don't hesitate to get in touch with us:  
GEA Refrigeration Technologies and its companies are  
located worldwide. Our complete addresses are available  
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