



Tasty, fresh and cool

The Chinese ACE Agriculture Group produces freshly cut fruits and vegetables in top quality. In the modern production plant in Lianyungang in the Jiangsu Province at the Yellow Sea, Güntner air coolers provide the hygienic and cool manufacturing and storage conditions. Every year, the plant in Lianyungang produces about 100,000 tonnes of fresh-cut products from 150,000 tonnes of raw fruits and vegetables.

The ACE Agriculture Group supplies the booming markets in the fast-moving cities at the Chinese east coast with fruits and vegetables as convenience products. The buyers of the ready-to-eat and semi-finished products cultivated in ACE's own gardens are retailers, supermarkets and the catering industry. The company made it their goal, using own recipes, not only to deliver first-class products in terms of taste but also to contribute to a balanced and healthy diet.

Controlled life cycle of fresh goods

In order to achieve this goal, the company invested 450 million Yuan in establishing agricultural production plants, an own cooling logistics fleet and a manufacturing plant for fresh fruits and vegetables including a high-bay cold storage. The plant in Lianyungang is capable of processing up to 2,000 kg of fruits per hour on four automated production lines and, at the same time, 18,000 kg of vegetables on nine production lines, which amounts to about 100 tonnes per day. The fruits and vegetables come from the growing regions



Overview

Line of business:	Industrial refrigeration
Application:	Fruit and vegetable cooling
Country/city:	China/Lianyungang
Fluid:	Ammonia, water glycol
Product:	Güntner Vario DUAL DHN and CUBIC GHN air cooler

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Güntner air coolers Vario DUAL (DHN type) distribute the cold air evenly throughout the room.



The Güntner Vario CUBIC GHN air coolers installed in the cold storage have only a low temperature difference between supply air and exhaust air. This operating mode is chosen to avoid losses of weight of the raw vegetables and fruits caused by evaporation.

of Ganyu, Lianyungang in the province of Jiangsu situated on the Yellow Sea coast.

In Lianyungang, the environmentally friendly ammonia is used as refrigerant. The machine room, the condensers and the piping for the ammonia direct expansion evaporators are on top of the roof as it is rarely the case – given the warm and humid maritime climate in Lianyungang – that temperatures drop below the freezing point.

Heat recovery

The total refrigeration capacity of the compressors of the ACE plant is 1,700 TR (6 MW). The cold is primarily used for NH₃ evaporators which cool down the store and production areas of the plant. All coolers are defrosted with hot gas. Further waste heat of the compressors is recovered with a water glycol circuit that in return heats water for the cleaning process. A heat recovery system is implemented into this process as well.

There are constant temperatures in the whole plant: These are in detail the departments production area processing and packaging, about 4,000 m² in size, the docking zone (1,700 m²), the cold store with a three-storey pallet storage space of 6,000 m² and the transport routes (800 m²); temperatures are kept constant at 2 – 4 °C throughout the year.

Low difference of temperature

43 Güntner Vario CUBIC air coolers (type GHN) in total with draw through fans provide, thanks to their great air throw, a uniform cold supply in all areas apart from the production and packaging zone. The CUBIC coolers are robust, easy to mount and to maintain and HACCP hygiene-certified. The casings are made of galvanised steel. All the materials are approved for use in foodstuff processing applications.

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There was no need to install a blast chiller because all goods are delivered in refrigerating vehicles.

Draught reduced cooling

In the production areas of processing and packaging, 16 Güntner Vario DUAL air coolers (DHN type) also provide a constant room temperature of 2 – 4 °C but the work station requirements are different. These air coolers have also a hygienic design but run in a draught-reduced and low-noise operating mode. The flat, dual discharge air coolers are mounted each to the centre of the rooms' ceilings from where they distribute the cold air evenly throughout the room. The fans are epoxy resin-coated so that they are permanently resistant to aggressive cleaning agents.