



Fresh-frozen

Arbacommerce d.o.o. Zadar in Labin, Croatia, refrigerates and freezes sardines that were freshly caught in the waters of the Mediterranean. The modern fish processing plant processes 4,000 tons of fish annually, both in blocks and as individually frozen fish (IQF). Güntner condensers and air coolers ensure seamless cooling operations in connection with compound systems.

With its rocky sea floor and crystal-clear water, the open Adriatic near the Croatian islands provides the best fishing grounds for sardines and anchovies in the Mediterranean. Bringing this high level of quality to the kitchens and tables of European consumers unadulterated is very important to the Croatian company Arbacommerce d.o.o. Zadar.

Its modern fish processing plant, located only five kilometres from Plomin harbour in Labin in the eastern part of the Istria peninsula, features in a space of 3,500 square meters two blast freezer tunnels with trolleys, one IQF spiral freezer, and two scale ice machines.

To cool and store the fish, the complex has 18 refrigerated rooms (185 sqm, capacity: 100 tons) with temperatures ranging from 0 to 4 degrees C and six freezing rooms (650 sqm, capacity: 520 tons) that are kept at -25° C. The 2,600 square metres of work area comprise processing and salting rooms that are kept at 6 to 10° C. In addition to frozen fish, Arbacommerce also produces marinated and salted fish.



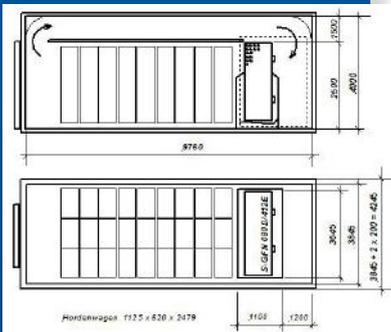
Overview

Business line:	Industrial refrigeration
Application:	Fish processing
Country/City:	Croatia/Labin
Fluid:	R404A
Units:	GVH condenser and Vario air cooler type GHN and DHN and Compact air cooler of the CUBIC GHF, FLAT GDF and DUAL DHF series

Güntner GmbH & Co. KG
Hans-Güntner-Straße 2 – 6
82256 FÜRSTENFELDBRUCK
GERMANY



The production area comprises 2,600 square metres.



Tunnel with trolleys



Condensers mounted on a steel construction next to the machine room.



The work and salting rooms are kept at 6 to 10° C.

Quick freezing

As soon as the fish has been caught, it is stored on the ship in a mix of cold seawater and ice. After landing, it is trucked to the processing plant without interrupting the cooling. To maintain quality, the fish must be frozen quickly. The two tunnels with trolleys can freeze roughly 25 tons of fish in 12 hours. Each tray holds up to 8.5 kilograms of fish, and each trolley in turn holds 54 trays for a total of 459 kilograms. Each tunnel in turn can hold 27 trolleys.

The air velocity between the trays must be at least 5 metres per second in order to ensure a consistent temperature transfer. The last trolley is equipped with a sensor that is placed between the sardines. When it reaches -20 °C, the freezing process is stopped. The IQF spiral freezer, on the other hand, has a capacity of 550 kilograms of sardines and anchovies per hour.

Decentralised cooling

The challenge for Austrian plant contractor Frigopol Kälteanlagenbau GmbH based in Frauental was to accommodate the varying cooling requirements of the production and storage areas. The company therefore designed a decentralised system where the condensers deliver precisely the amount of cooling that is needed in a particular location. The system was installed by the Croatian company Terma H.G.H d.o.o. which is based in Zagreb-Sesvete.

The fish which are still alive are delivered to Labin intermittently and in quantities that differ from day to day. The average production time during peak cooling loads is approximately ten hours. The refrigerating machines deliver refrigerant flow temperatures of -35° C for deep-freezing applications and of -8° C for cooling applications.

The two scale ice machines require -32° C, and the blast freezer tunnels with trolleys and the spiral freezer are supplied with cold air of -40° C. To keep maintenance costs low, the operators decided to use R404A refrigerant.

The entire refrigeration technology is equipped with a heat recovery system that transfers the heat generated by the condensers to the hot water supply. With an average running time of 10 hours per day, the heat recovery system saves roughly 434,000 kilowatt-hours of energy per year.

Güntner condensers and air coolers

Güntner components support both the warm and the cold side of the refrigeration process. All the equipment was designed with the Güntner Product Calculator.

To improve the air distribution, most of the Güntner condensers are installed on a steel construction next to the machine room. The equipment consists of one S-GVH 090 with two integrated circuits, a GVH 065, two S-GVH 090 with subcoolers, and two GVH 080. A refrigerant receiver is installed under each condenser.

The fans have continuous speed control that is based on the condensing pressure. A total of 31 high-performance air coolers supply the various cooling and climate zones in the building. All units of the GHN and DHN Vario series and the CUBIC GHF, FLAT GDF and DUAL HDF Compact series feature corrosion-resistant epoxy resin coating.

In each of the tunnels with trolleys, a floor-mounted Güntner BLAST S-GFN blast freezer ensures that the air flows evenly and horizontally through the trolleys. The units feature high-capacity blow-through fans with high external pressure. The IQF spiral freezer operates with a Güntner GCO air cooler with

Güntner GmbH & Co. KG
Hans-Güntner-Straße 2 – 6
82256 FÜRSTENFELDBRUCK
GERMANY



The cold air streams from the cubic Gntner GHN air coolers into the work areas through textile socks.



A trolley holds 54 trays, each of which with 8.5 kilograms of fish.



A Gntner S-GVH condenser with subcooler on the roof of the machine room

AlMg3 fins. The evaporators/air coolers for both freezer systems are equipped with electronic direct-expansion valves.

Draught-free air conditioning

To make the air distribution in the work areas draught-free and comfortable for the employees, the cubic air coolers are equipped with a textile sock that distributes the air evenly.

A central logging system monitors and documents the operating data for the various controllers, such as the evaporator pressure, superheating, defrosting, as well as product and room temperatures. It also compares actual and target values. An integrated control system controls the condensers and networks the refrigeration units with each other.

Gntner GmbH & Co. KG
Hans-Gntner-Strae 2 – 6
82256 FRSTENFELDBRUCK
GERMANY

Member of Gntner Group

