



COOLING AND PROCESSING OF GRAPES WITH SECONDARY SYSTEM AND TEMPER -20

In 2016, Uvas Doce S.L., replaced their secondary installation of propylene glycol with an efficient, state-of-the-art energy solution for its new processing and packaging plant in Monforte del Cid, Alicante.

Uvas Doce S.L.'s indirect cooling system uses R-1234ze and Temper -20 as a secondary fluid and was designed by Instalaciones Frimavi S.L, in Villena. This the state-of-the art installation does not only save energy and get an environmentally focused installation, the product quality has also been greatly improved. The plant is capable of cooling and processing 10,000 kg of grapes per hour. The grapes are cooled by a forced air system, packed and ready for transport within 6 hours.

Forced Air Cooling System: PRECOOLING

Forced air pre-cooling is a widely used method for cooling fruits, vegetables and cut flowers. This technique forces high volumes of cold air at high pressure through the packaging, quickly and uniformly extracting the heat contained in the product. Almost all fresh produce from supermarkets can be pre-cooled by forced air, although it is more commonly used for fruits that comes from trees, blackberries, melons and cut flowers.

In order to achieve effective air-cooling the packaging must be designed to allow a great flow of cold air to pass through and a very strong circulation of air is needed. The forced air cooling system is able to cool large quantity of products in a single batch, without the need to handle a specific temperature for individual boxes.



Installation Facts:

Refrigeration Power Installed:
578 kW

Primary Refrigerant:
R – 1234ze GWP 0, ODP 0. (82 kg)

Heat Transfer Fluid:
Temper -20 (20.000 liter)

Operation Temperature: -6°C

Pipes Materials:
Stainless Steel and Plastic

Brine Defrost:
Temper -20



Advantages:

Reduced energy consumption and smaller system components compared to MPG USP

Low pressure system, with greater reliability.

Improved product quality due to more stable process and storage temperatures.

In accordance with the F-GAS regulations.

Defrost with the same secondary fluid, using the waste heat of the condensation.



The forced air cooling system is designed with an 100% HFO refrigerant, R - 1234ze. By choosing an HFO refrigerant, problems related to HFC refrigerants (F - Gas and environmental taxes in Spain) and primary ammonia installation (work place safety concerns) can be avoided.

The forced air cooling system consist of several inertia tanks that stores 20 cubic meters of Temper -20, at -6 °C, and serves refrigerated areas through a set of electronically controlled pumps.

Efficient Defrost with Temper -20

Temper -20 as a secondary fluid also serves the general defrost system. It is designed to obtain heat through heat exchange from the condensation of the primary refrigerant: this system significantly reduces energy consumption and CO₂ emissions compared to electrical defrosting systems.



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Uvas Doce S.L. Facts

In 2000, a young team of second-generation successors of Alfredo Miralles Perez (Frutas La Ballena) started a product line within Uvas Doce S.L.. Soon after, the successors set a strategy to become one of the most important companies in Europe, producing, importing and exporting grapes.

Uvas Doce S.L. is located in Monforte del Cid, heart of the Vinalopó Valley (Alicante), a privileged area for cultivation of table grapes thanks to the proximity to the Mediterranean Sea. The climate and the geographical characteristics creates exceptional conditions for growing high quality fruit.

Uvas Doce S.L stands for the most innovative production and packaging techniques, combined with more than four decades of experience in the sector. Techniques that the manager Alfredo Miralles has handpicked from the most important grape production areas around the world. The perfection, the adaptation to the exceptional geographical characteristics of the Vinalopó Valley has resulted in the 'Uvasdoce Method'. A method that applies to both crops and production.

Temper Facts

Since 1996 the Swedish company Temper Technology manufactures the green and energy efficient Heat Transfer Fluid -Temper. HTF Iberian Partners s.l., is the Official Distributor of Temper since 2014, for Spain and Portugal, being its Commercial Representative for Hispanoamerica.

Temper is mainly used in larger food industry applications and logistic centers. To ensure the high quality Temper is always delivered ready-to-use and can be used down to -60 °C.

Secondary fluid:

Heat Transfer Fluid: Temper -20
Freezing point (°C): -20
Operational temp. (°C): > -20
Density kg/m³: 1142*
Spec. Heat (kJ/kg. K): 3,315*



*@20 °C

Frimavi Facts

Instalaciones Frimavi S.L. has more than 30 years of experience in the sector.

Mr. José Luís Sánchez, and Instalaciones Frimavi, is seen as a specialist in refrigeration of fruits and vegetables, a pioneer in Hydro Cooling and Vacuum Cooling system in Spain.

Its scope of action is in the provinces of Alicante, Valencia, Albacete and Murcia.