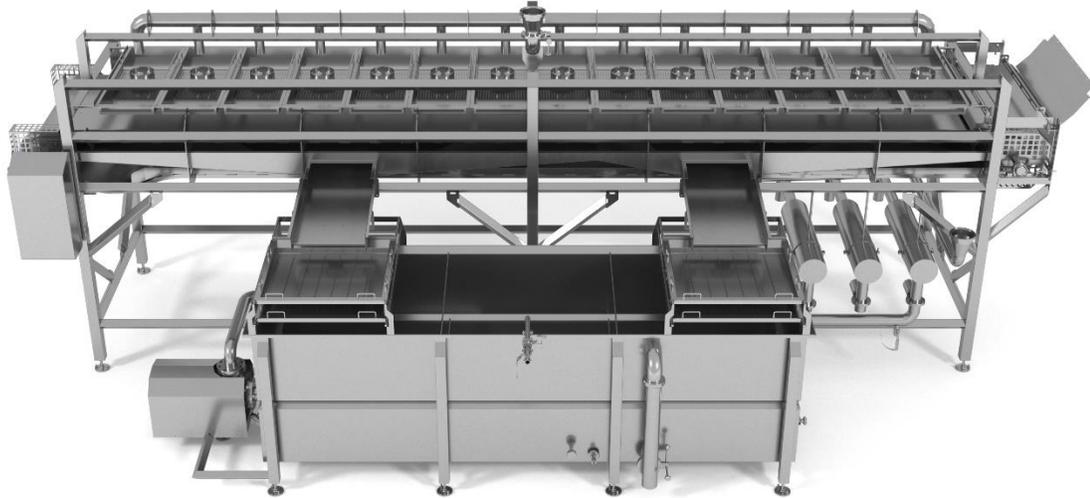


OctoFrost™ IF Chiller



WHAT IS CHILLING

Chilling is the process of quickly cooling down a product which has been cooked or blanched. The preferred chilled medium is cold water. Fresh products, such as fruits, can also be pre-chilled to drop the core temperature and enable efficient IQF freezing.

CHILLING IS DONE TO:

- quickly stop the cooking or blanching process to prevent excessive moisture loss (yield loss);
- chill the product to the lowest possible temperature for an energy efficient IQF freezing (it is cheaper to drop the infeed temp in the chiller than in the freezer);
- get quicker crust freezing to limit dehydration for a product of premium quality;

OCTOFROST™ IMPINGEMENT FLASH (IF) CHILLER

The OctoFrost™ IF Chiller guarantees the quickest heat transfer through its **rain shower system**. The water is filtered, recirculated and then chilled by the plate heat exchanger (PHE). The PHE provides ice-cold water with a temperature of 1°C. The system is designed to reach a product core temperature of 5°C or less. The water falls gently over the product by means of gravitation only, therefore product quality is not compromised. Additionally, the rain shower system has a product cleaning function.



OctoFrost™ Rain Shower System

OCTOFROST™ CROSS-FLOW vs. TRADITIONAL COUNTER-FLOW

The **OctoFrost™ cross-flow water system** results in the quickest possible chilling of the product. The high volume of filtered and recirculated 1°C water is distributed evenly across the whole width and length of the chiller; deluging the product and immediately exiting the chiller to be re-chilled by the PHE.

The temperature increase of the water after passing through the product does not exceed 4°C, requiring little energy for re-chilling. The water flowing through the chiller has the exact same temperature in every zone.

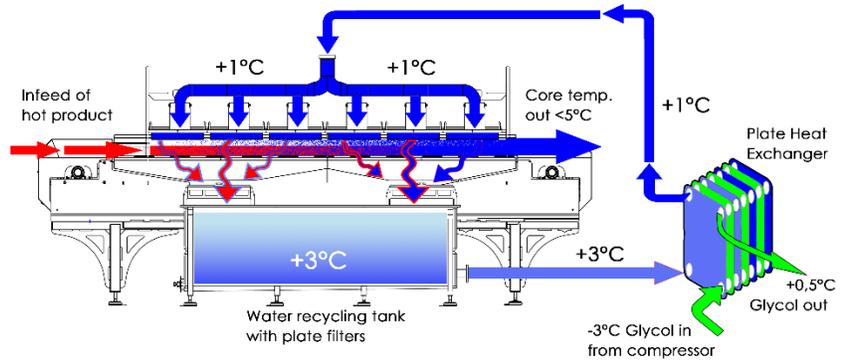
IMPINGEMENT FLASH

Every product is surrounded by a static, so called “boundary layer” of air, which insulates it and slows down the heat transfer. The OctoFrost™ IF Chiller, by means of its **rain shower system**, breaks this static layer by impingement. This results in the fastest heat transfer through conductivity and this is the essence of the **OctoFrost™ Impingement Flash (IF) technology**.

KEY BENEFITS IF CHILLER:

- The temperature of the chiller water is between 1° and 2°C in every position in the IF Chiller;
- Cross-flow water circulation
- Quicker chilling process which improves yield and product quality;
- System temperature in the IF Chiller is below 6°C for reliable food safety;
- The fastest heat transfer due to the high volume of 1°C ice-cold water and the impingement flash (IF) technology, compared to any other system available;
- High volume of recirculated water over the product;
- CIP system in place;

Impingement Flash Chiller
with Cross-Flow recycling water system



A counter-flow water system, however, has water with the set chilling temperature entering the opposite side of the product infeed. This water warms-up while passing through the whole length of the chiller, resulting in a longer chilling time and significantly less control over the water temperature.

A traditional counter-flow water system discharges the water after each cycle, therefore consuming more water than the OctoFrost™ IF Chiller with its water recycling system. Cold air chillers require even more time and energy to reach the required temperature, while dehydrating the product in the process (yield loss).

CUSTOMER BENEFITS

The OctoFrost™ IF Chiller comes with a number of benefits for the processors:



► High Product Quality and Yield

A well-chilled product has a core temperature of 5°C or less and has retained its moisture and flavor. The OctoFrost™ IF Chiller is designed to achieve just that.

After blanching or cooking, the product will gently fall into the ice-cold water and will immediately stop the blanching or cooking process, preserving high yields.



► Energy Efficiency

Energy Efficiency is one of the main design criteria of the OctoFrost™ IF Chiller.

As heat transfer is faster with water than with forced air or traditional counter-flow water chillers, the OctoFrost™ rain shower system achieves the fastest heat transfer.

IF CHILLER VS. OTHER TECHNOLOGIES

There are several advantages for using the OctoFrost™ impingement rain shower system:

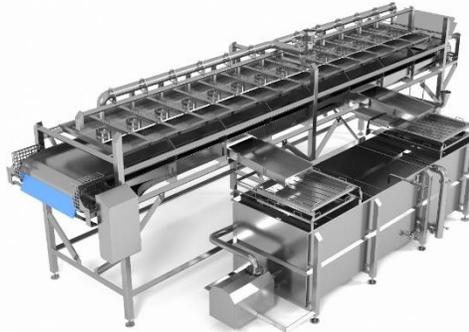
- at least 30% faster chilling, resulting in shorter tunnel and less energy consumption;
- the high volume of recirculated water is able to penetrate a higher product layer on the belt while maintaining the chilling water temperature. A spray water system uses up to 10 times less water on the product, therefore the chilling is slower.
- Traditional air chilling systems dehydrate the product, use more energy and have a larger footprint.

EQUIPMENT CAPACITIES

OctoFrost offers a capacity range of 1,000 to 15,000 kg/h for the OctoFrost IF Chiller.

Contact us for more information at sales@octofrost.com

The water in the IF Chiller is efficiently chilled to 1°C by the Plate Heat Exchanger. After each filtered cycle, the temperature difference or (ΔT) is less than 3°C, therefore requiring minimal energy to re-chill the water. By efficiently using the energy in the IF chiller, energy consumption in the IQF freezer is considerably reduced.



Water consumption is only caused by water pick-up on the product which usually ranges between 5% and 10% of the production capacity (e.g. for a 2000 kg/h production, water consumption would amount 140 l per hour).

Because of the recirculation system the OctoFrost™ IF Chiller uses up to 90% less water than other chilling systems.

► Food Safety



The OctoFrost™ IF Chiller has been designed to exceed all international regulations on food safety and hygiene. Every part of the chiller which comes in contact with the chilling water can be cleaned by CIP (Cleaning-In-Place).

All piping, Aisi 316 stainless steel, is *backing-gas* welded. This method ensures the highest hygienic standard possible.

The whole system, including the PHE and filter will remain below the critical 6°C to guarantee food safety. This means that the chiller can run non-stop, without the need for a water change, until the end of the production day.