

Star Cool CA Controlled Atmosphere



OPTION

Star Cool CA - Competitive atmosphere control

The new Star Cool CA technology (patented) controls the atmosphere inside a container, allowing containerised fruit transportation over long distances. By maintaining an uninterrupted, controlled atmosphere and refrigerated environment, commodities like bananas and avocados can now be transported in reefer containers at competitive freight levels compared to bulk vessels and without the many cargo-handling stages.

CA and perishables

Fresh fruit, vegetables and flowers are living organisms that take in oxygen (O_2) and produce carbon dioxide (CO_2) in a process known as respiration. After harvest, fresh produce continues to respire and the ripening and aging process continues.

Storing or transporting for a long period of time requires slowing down this ripening and aging process. To do this, controlling the temperature is an important factor as well as reducing the O_2 level, because this will delay the ripening process and extend shelf life considerably. Slowing down the process also permits growers to harvest produce closer to its natural maturity time and peak flavour.

Star Cool CA system

The CA system takes advantage of the natural respiration of produce. It absorbs O_2 and releases CO_2 , thus reducing the O_2 level in the container. The Star Cool CA system monitors the O_2 and CO_2 levels as the cargo respiration modifies the atmosphere. Once the preset limits are reached, the system will then actively maintain both O_2 and CO_2 levels at the desired beneficial environment level.

Star Cool CA has proven its efficiency in, for example, long distance transport of bananas and avocados. With this technology, the system will work well with any fresh produce with similar high respiration levels that benefit from atmosphere control.

The sensors of the Star Cool CA system, together with the control unit and membrane system, will maintain the preset atmosphere composition at the desired level.

Membrane

The membrane is made of several sheets of high-tech polymer film that specifically allow the easy permeation of CO_2 while being more resistant to nitrogen (N_2) and O_2 . If the measured CO_2 level exceeds the set point, a vacuum pump will create the necessary pressure differential, allowing the CO_2 to diffuse through the membrane and be discharged to the outside.

Fresh air intake

If the O_2 content drops below the set point, the fresh air intake will open, allowing the entry of a controlled amount of ambient air, containing 21% O_2 until the set point is reached again.

Sensors

The output of the self-calibrating sensors for relative humidity, CO_2 and O_2 are fed into the control unit, which in turn controls the vacuum pump and the fresh air intake.

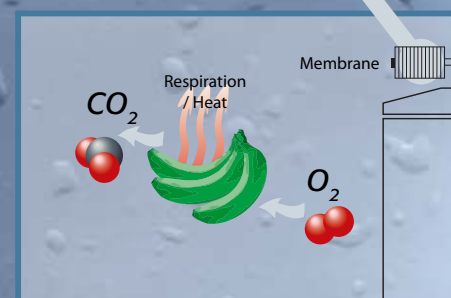
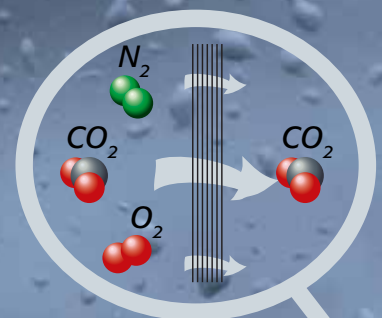
The combination of the respiring perishables, the CO_2 filtration membrane and the fresh air intake makes it possible to reduce the content of both CO_2 and O_2 and increase N_2 content.

The Star Cool CA system is fully installed in our own Star Cool Integrated reefer container.

PRINCIPLE

Membrane

The membrane effectively filters CO_2 from the atmosphere surrounding the cargo.



Respiration

The cargo absorbs O_2 and emits CO_2 .

Fresh bananas grown under ideal conditions

Star Cool CA ensures ideal transport conditions, even on long journeys to remote markets.



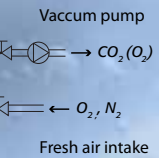
The central control unit allows you to safeguard your valuable perishables by presetting the desired temperature and atmosphere composition.



EPDM curtain track (patented) is an easy-to-install rail with improved air tightness and better resistance to water penetration.



Vacuum pump
The vacuum pump operates on the CO₂ side of the membrane.



Fresh air intake
lets in air from the atmosphere to regulate the gas composition inside the box.



SEALED FRESH

Bring new markets within reach



The purchase price is only a fraction of the true cost of owning and operating a reefer

Reducing the Total Cost of Ownership (TCO) for MCI reefers involves many different aspects.

Using Star Cool will reduce your TCO by:

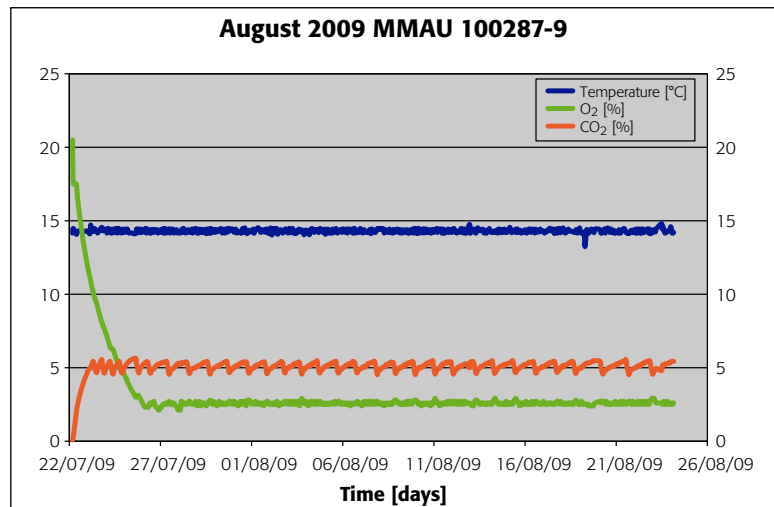
- Reducing energy cost thanks to the efficient Star Cool unit
- Self-calibrating sensors
- Unique low-cost (patented) rubber curtain track
- Low preparation cost

You benefit from all the TCO advantages of the Mark Q reefer container design and the Star Cool unit.

Bringing fresh products to distant markets



In addition to bringing a higher-quality product to the point of sale, you can take advantage of improved storage time by safely shipping your cargo to distant destinations, bringing new markets within reach. For example, with our advanced technology, it is now possible to send bananas from Ecuador to the Middle East or from Costa Rica to Russia within 45 days.



Real life data: Ideal conditions can be achieved and maintained when transporting bananas from Ecuador to Denmark.

Benefits

Controlled atmosphere (CA) is a proven technology that extends the post-harvest life of certain produce when transporting it over long distances. Maersk Container Industry has taken this technique a step further, enabling Star Cool CA to offer a number of benefits that will improve your business:

- Small consignments – with a constant flow of produce, you can make the container your warehouse
- Easy control of marketable stock – no sudden peaks in supply that will adversely affect prices
- Access to new, remote markets

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