

Thermozone[®] air curtain solutions

Cold storage



air curtains · radiant heaters · fan heaters

Advantages with Thermozone in cold storage

Economy

- Lower cold losses. To cool down air is expensive and large savings can be made
- The cooling equipment will have longer life and increased efficiency as ice build-up is reduced
- Energy is also saved through reduced need for defrosting
- Avoiding accidents and reducing maintenance on cooling equipment also means no costs for equipment being idle.

Safety

- Higher visibility due to reduced condensation and nothing obscuring visibility
- Ice build-up on the floor is prevented

Hygiene

- A more stable temperature means better quality control

Accessibility

- Easier access for people and vehicles



Special features of Thermozone air curtains

Thermozone Technology

Thirty years of air curtain development in the demanding Scandinavian climate has given us a unique platform to create air curtains with optimal door protection.

Thermozone air curtains are optimized in:

- Airflow geometry
- Performance
- Sound level

Low sound level

The fans we use and our optimized airflow geometry gives a low sound level.

Design

Frico cooperate with leading architects and product designers to create today's aesthetic products.

Air curtains for every application

Frico offers a wide range of options with or without heat and for all openings from service hatches to air craft hangars.

To use air curtains without heat to maintain the cold temperature in cold storage is a sensible choice. Energy losses are lowered, delicate products are better protected and the accessibility by people and trucks is improved. An air curtain is also a sensible choice from a safety aspect since the visibility is improved and ice build-up on the floor prevented.

It is important to choose an air curtain that is efficient enough. Thanks to our Thermozone technology we can offer air curtains with a consistent air stream and optimal balance between air speed and air volume giving a superior performance. The low sound level of Frico air curtains is also an important factor to create a pleasant working environment.

The ability to adjust the airflow to local circumstances is fundamental to achieve the desired result. Frico air curtains are therefore designed for flexible adjustment and are also supplied with a simple but efficient adjustment gauge that helps you set the air curtain for optimal performance.

Frico has been developing and manufacturing products for a comfortable climate since 1932. Today, Frico is the leading supplier of air curtains, radiant heaters and fan heaters in Europe. We have a wide range of professionally designed products that are reliable, functional and of superlative quality.



Why use Thermozone air curtains in cold storages?

Cold storage is a demanding application. The large temperature differences result in energy losses, temperature rise in the cold sections and ice build-up on the floor and on cooling equipment. Thanks to Thermozone technology these problems can be avoided.

Airflow due to temperature differences

Warm air is less dense and lighter than cold air which causes a pressure difference at the opening. Cold air streams out at the bottom of the opening and forces in warm air through the upper part of the doorway. See Fig. 1. Measurements done by Frico in cooperation with Malmö University, Sweden confirm this. See Fig. 2.

Airflow counteracted by Thermozone technology

Frico air curtains with Thermozone technology has a consistent air stream and optimal balance between air speed and air volume that gives an efficient separation of the air masses. See Fig. 3.

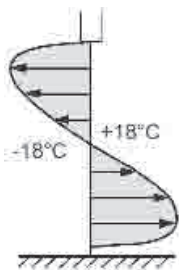


Fig. 1 Airflow due to thermal pressure differences

The importance of a correctly adjusted air curtain

Adjustment is fundamental to achieve the desired result from your cold storage air curtain. Frico air curtains are therefore designed for flexible adjustment and are also accompanied by a simple but efficient adjustment gauge that makes it easy to set the air curtain for optimal performance, see Fig. 3. The illustrations below show measurements done on air curtains that are not correctly adjusted, see Fig. 4 and 5.

The dark red colour shows room temperature and the darkest blue colour the lowest measured cold storage temperature. The value on the x-axis indicates the distance in centimetres from the air curtain, the value on the y-axis indicates the distance in centimetres from the floor. To the right of each diagram is a key to the colours/temperature relationship.

The test was made with Thermozone ADA Cool and carried out by Malmö University, Malmö, Sweden. Read more about the test in our Air curtain catalogue.

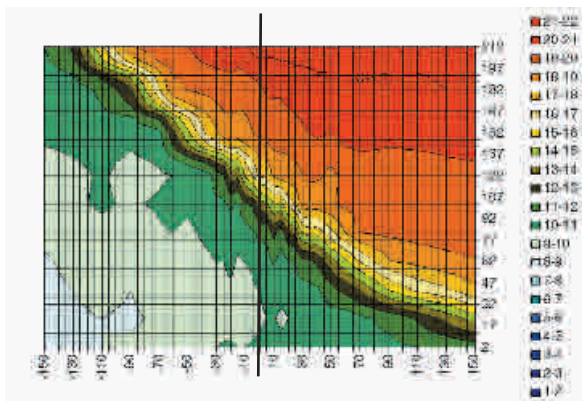


Fig. 2 Opening without air curtain

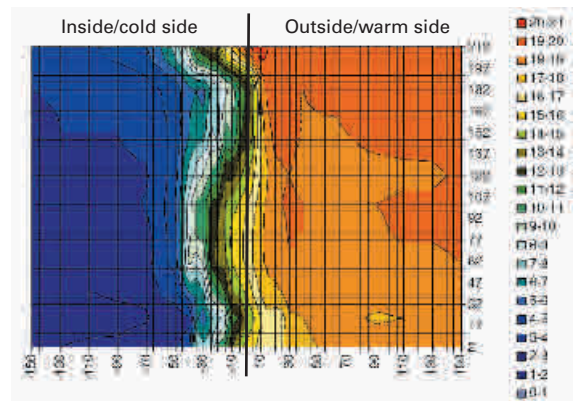


Fig. 3 Opening with a correctly adjusted Thermozone air curtain

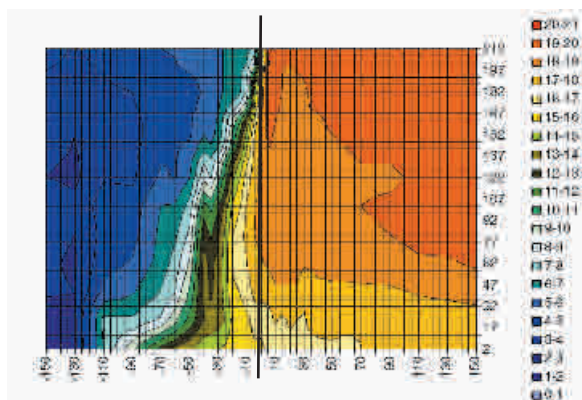


Fig. 4 Opening with an air curtain set at the wrong angle

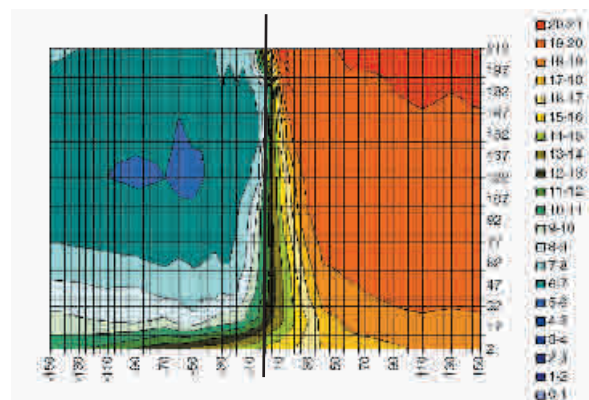


Fig. 5 Opening with an air curtain, velocity too high

Case study: air curtains vs. plastic strips

Manuel Carvalho SA in Portugal measured the differences in efficiency between plastic strips and the Thermozone ADA Cool. They measured the temperature rise over 24 hours, four days before the installation of ADA Cool and four days after.

ADA Cool proved to be much more efficient in keeping the cold air inside the cold storage. Manuel Carvalho SA found further advantages compared with plastic strips. The risk of accidents is reduced when build-up of ice on the floor is prevented and the visibility through the opening is improved.

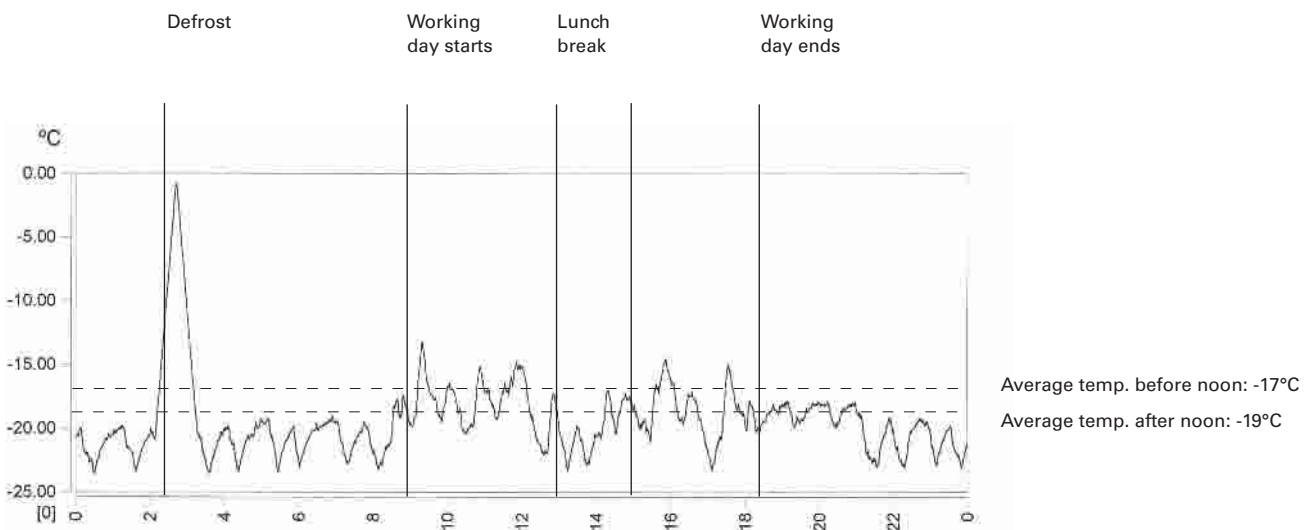
Advantages of air curtains in cold storage openings:

- Lower cold losses
- Improved visibility
- Build-up of ice prevented
- No accidents with trucks getting stuck in the plastic strips
- Easier access through the door

Temperature increase over 24 hours with plastic strips



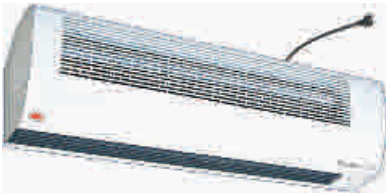
Temperature increase over 24 hours with Thermozone air curtain



Details:

Customer: Manuel Carvalho SA
City: Gafanha da Nazare, Portugal
Date of installation: June 2003
Cold storage dimension: 23x11x6m
Dimension of opening: 2,2x 2,5m
Cold storage temperature: -23°C
Outside temperature: +20°C
Door opened 100 times per day

Choice of Thermozone air curtains for protection of cold storage



Thermozone ADA Cool



Thermozone AD



Thermozone AG



Thermozone AGV



Speaking of nothing #5 | **Ice build-up**

The Antarctic consists of several glaciers that have grown together during many million years. The average thickness of the ice is 2500 metres and at some places 4000 metres, almost as thick as the highest alpine peaks.

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