Cold storage

Dehumidifiers for cold rooms

Get In Touch

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DEHUMIDIFIERS

Dehumidification for cold storage

Calorex Desiccant units are ideal for preventing ice build-up and reducing energy consumption making them very cost effective.

How it works

In cold storage, the temperatures are usually between +3 to +5°C, and in a freezer this drops to around -25°C.

The key point within a freezer or cold store is to achieve a dew point temperature within the room air, lower than those of the surfaces within the store, and foremost to be lower than the dew point of the evaporator.

By doing so, the build-up of ice in freezers can be significantly reduced or eliminated. This makes the evaporator work more efficiently, i.e. consume less power, and there will be little to no need for de-icing, which is often a costly and time consuming process.

There are three main ways to install a dehumidifier in a freezer or cold storage facility. This will depend on the existing construction as to what is the preferable approach.

1. The dehumidifier can be installed inside the freeze room. This will take up some room inside the freezer, and also require the reactivation air ducts (connected to the external air) to be heavily insulated outside of the freezer, to prevent ice forming inside. Ease of maintenance should also be considered, as this may be difficult when the internal temperature is -25°C (See Fig 1).
2. You can install the dehumidifier outside of the freezer and lead the process air ducts into the room. This has the advantage of not taking up any space within the freezer itself, but the ducting outside of the space will again need to be heavily insulated to prevent ice build-up on the external surfaces of the pipe. The dehumidifier itself comes with a 100mm thick insulated case to avoid icing. This arrangement also has the benefit that any access or maintenance to the machine is not hindered by the freezer temperatures. (See Fig 2).
3. The third way is to dehumidify the air lock(s), rather than the freezer directly.

In this application the unit can be mounted within the air lock or external to it, with little changes in the installation, as there is no longer a large temperature differential between the two air streams, and the main factor being availability of space for the unit.

The most common way is to install the unit inside the airlock, like in the inside version of the freeze room, but you can also install it as an outside version and let the dry air into the airlock, like in the outside version. The advantage of dehumidifying the air in the air lock is that you reduce the most important factor concerning the moisture load, the infiltration during door openings. This is perhaps the most favourable way to dehumidify a freeze storage. (See Fig 3).

Dehumidifier installed inside the cold room

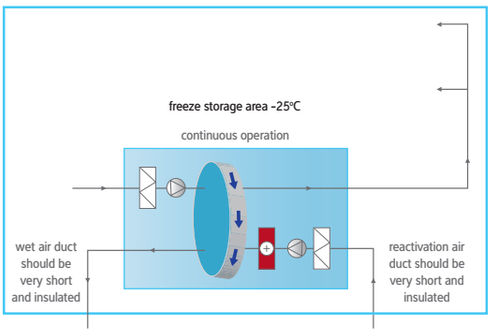

Fig. 1

Dehumidifier installed outside the cold room

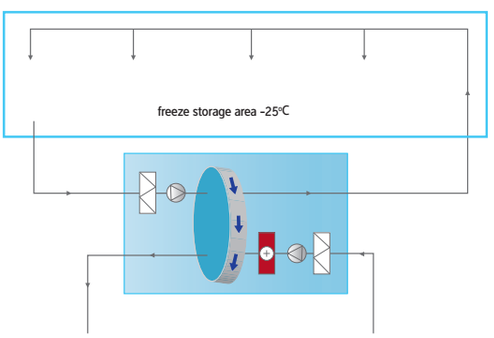

Fig. 2

Dehumidifier installed in the air lock

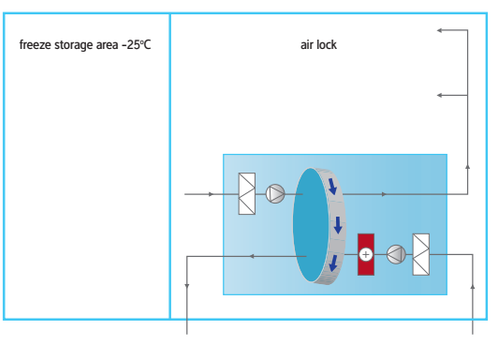

Fig. 3

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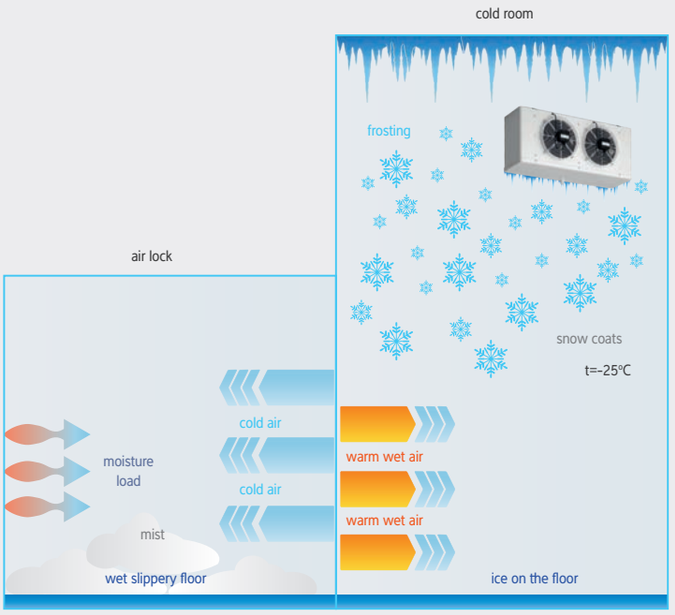
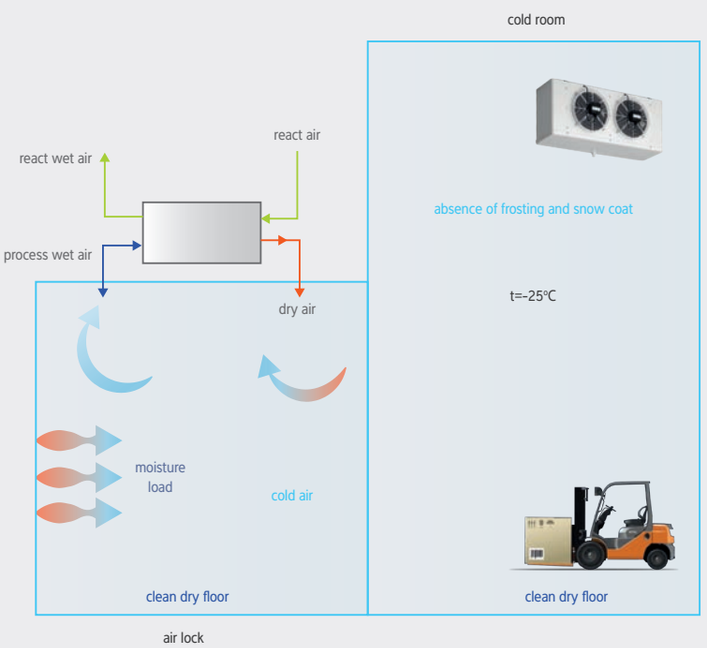
Problems faced from humidity in cold storage:

- Ice and snow build-up on chiller coils
- Ice build-up on walls
- Ice build-up on stored products
- Ice build-up on shelves/racking
- Frequent defrost cycles
- Dangerous Ice build-up on floors
- Fogging causing low visibility
- Wet floors near entrances and in airlocks
- Increased energy consumption



Advantages of using a desiccant dehumidifier in cold storage:

- Prevention of ice build-up on chiller coils
- Prevention of ice build-up on walls
- Prevention of ice build-up on stored products
- Prevention of ice build-up on shelves/racking
- Reduced/infrequent defrost cycles
- Clean dry floors
- Elimination of poor visibility due to fogging
- Dry floors in entrances and airlocks
- Reduced energy consumption



Technical data

Model	Units	DT1500	DT2600	DT3600	DT4000	DT5000
Dry air flow	m^3/hr	1500	2600	3600	4000	5000
Wet air flow	m^3/hr	220	300	350	600	1000
Total power connection	kW	6.1	10.5	11.9	18.8	28.8
Total power connection (with heat exchanger)	kW	3.4	7.8	9.2	10.7	N/A
Maximum capacity at -18°C	kg/h	1.25	2.12	2.94	3.21	4.08
Dimensions inside version	mm	1199 x 807 x 1170	1199 x 807 x 1170	1199 x 807 x 1170	1199 x 807 x 1170	1800 x 1160 x 1221
Dimensions outside version	mm	1339 x 947 x 1245	1262 x 947 x 1245	1262 x 947 x 1245	1262 x 947 x 1245	N/A

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