

The Dewpoint

Solutions to humidity problems
Produced by Seibu Giken DST AB



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No condensation in Östersund

Dry and fresh, with no condensation dripping from the pipes. This is the situation following installation of a dehumidifier at the Göviken sewage treatment plant in Östersund.

"It was fantastically dry," says a very pleased Peder Göransson, operating engineer at Östersund Vatten following installation of a DST dehumidifier in the pipe cellar. The results were immediately apparent, both improving the indoor climate and protecting the building from unnecessary moisture damage.

Good experiences from previous dehumidifier installations by Polair Luftteknik AB were the reason why the decision was made to install a dehumidifier in the the pipe cellar for secondary sedimentation at the Göviken sewage treatment plant. Prior to installation, condensation dripping down from the pipes had been a problem.

Ventilation can cause moisture problems

"The ventilation solutions used at water and purification plants do in some instances cause the moisture problems that arise. In this pipe cellar, enormous reduction of ventilation combined with installation of a sorption dehumidifier provided an ideal operating environment for electronics and electrical equipment," explains Bo Eriksson at Polair Luftteknik AB.

How does condensation occur?

When moist outdoor air enters a space such as a pipe cellar or water tower, where the cold pipes are at a lower temperature than the outdoor air, conden-

Forts nästa sida:



No more frost at the frozen and chilled storage facilities at Rema.

REMA in Norway resolves frost problems using dehumidification

Rema 1000 is one of Norway's biggest wholesalers/food product chains and has a number of large warehouses for food, including chilled and frozen products. In the huge frozen storage facilities, where the temperature is set to minus 25°C, condensation occurring when damp outdoor air enters can cause both ice and frost to form.

Among other things, Rema has a wholesale warehouse in Langhus, with seven docking bays for loading and unloading to frozen storage facilities set to -25°C and seven docking bays to chilled storage facilities set to a temperature of +3°C. As outdoor air is always entering the premises and there are other factors present which also create moisture, the company was experiencing problems with ice and frost.

In general, frost in frozen and chilled storage facilities can cause slippery floors, making it difficult to operate fork lift trucks there. Temperature differences can even cause mist indoors.

In a worst case scenario, icicles can form which could well fall down onto staff. Staff have to spend time cleaning and defrosting. In the loading bays, photoelectric cells may frost up.

In 2002, Alfsen og Gunderson installed in the warehouse a reliable dehumidifier without recirculation and with precooling so as to be able to supply dry, cold air to the storage areas. Nowadays the premises are completely free of ice and frost, despite the temperature of -25°C set in the frozen storage facility. Air which is less harsh is also a major plus for the staff!

In 2010, Alfsen og Gunderson supplied a similar installation to Rema in Bergen.



A truck on its way to a loading bay at Rema's frozen and chilled storage facilities.

Damp – the facts

100 % RH*	Fog or rain
~93-96 % RH	Salmonella bacteria die out below this level
80 % RH	Annual average, outdoors
70 % RH	Massive increase in the risk of mould and fungus forming
60 % RH	Chocolate gets flecks above this point
55-65% % RH	Massive humidity for corrugated cardboard
35-40 % RH	Timber dry enough for carpentry.
ca 30-40 % RH	Max limit for archives.
20-25 % RH,	Maximum humidity when manufacturing corn starch shapes.
10 % RH	Maximum humidity for gelatine manufacture.
1-2 % RH*	Maximum humidity for lithium battery manufacture.

sation occurs. Condensation can then drip down onto the floor and run down walls. This in turn not only causes a cold, harsh environment and a risk of slipping, but the water also undermines concrete floors and the strength of concrete walls.

Polair Luftteknik has also dehumidified the water tower in Lit, north of Östersund, where water was penetrating down through the floor under the reservoir and through the ceiling of the ventilator space.

The climate in the ventilator space under the reservoir was very damp, and the water also impaired the strength of the concrete.

The indoor climate was altered markedly following installation of a DST dehumidifier, type DR-40. One interesting side effect was that the concrete "sealed" itself in the new, dry climate.

You can read more about the company Polair Luftteknik here: www.polair.se



Installed a dehumidifier in the ventilation space in the water tower in Lit. Photograph from Polair.

RH= Relative humidity is, to put it simply, "the percentage of water in the air; compared with the maximum possible amount of water present in the air at the current temperature". 100 % RH = water vapour.

Dewpoint = When air of a certain temperature and relative humidity is cooled the relative humidity increases because warm air can contain more water vapour than cold air. If one has a surface that is cold the water vapour will condense on the surface at a certain temperature. The temperature at surface condensation is called the air's dew point. Dew means that water vapour from the air condenses on surfaces, such as car roofs and the outside of bottles containing cold liquids, because the surface temperature is below the dewpoint.

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"The Dewpoint" is a customer magazine produced by Seibu Giken DST. Its aim is to pass on knowledge regarding how moisture problems can be resolved and prevented.

Find out more at www.dst-sg.com

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