



## DH 24

Dew point controller for  
adsorption driers AD series B

## Configuration guide

### APPLICATION AND WORKING AREA

Dehumidification is required in waterworks because of the evaporation from water reservoirs and the supply of fresh air from outside.

If the waterwork is not dehumidified, metal pipes and surfaces will start to corrode, resulting in reduced lifetime and increased maintenance costs.

The temperature area in waterworks will often vary quite a lot during the season. It could be from 10°C in the winter and up to 22°C in the summer.

### CONTROL BASED ON RH VALUE COMPARED TO DEW POINT TEMPERATURE

Traditionally dehumidifiers in waterworks have been controlled on basis of the relative humidity, RH. This means that the dehumidifier starts when the relative humidity gets higher than a given RH limit.

The situation in waterworks, however, is rather special because the water in the water pipes has a constant temperature of 6-8° C, independently of the outside temperature and the room temperature in the waterworks.

Therefore the dew point temperature is relevant as an extra control parameter.

The dew point temperature is the temperature at a given air condition – described by relative humidity and temperature – where the air starts to condense.

If the dew point temperature is higher than the actual water temperature (6-8°C) this means that water will start to condense on cold surfaces, especially the water pipes, resulting in problems with rust and peeling paint.

Therefore it is a question of keeping the dew point temperature below the water temperature, as this will prevent condensation on cold surfaces.

In the following we will describe two different control strategies:

- 1) RH control
- 2) Combined RH and dew point control

## **RH CONTROL**

When you control on basis of RH you have to control on basis of the worst case value, i.e. the RH value which is critical for the max. temperature in the waterworks.

In this case it is 22°C and RH 35% (found in the figure on next page at the dew point temperature which is set at a water temperature of 6°C).

When the temperature in waterworks goes down to 10°C in the winter, it will continue controlling on basis of RH 35%, even if it is not necessary, as the dew point temperature is much lower than the water temperature.

Due to the fact that it continues to control on basis of the RH value, although it is not critical, there will be a wasted working area, which is illustrated by the triangle in the figure on next page (composed by a grey and two black lines/curves).

## **COMBINED RH AND DEW POINT CONTROL**

Often a good indoor climate and comfort is required in the waterworks as well, or maybe there are other components, as f.inst. electric components that require a sufficiently low RH. Typically this could be RH 60%.

Therefore quite often a combination of both dew point control and RH control will be used.

## SETTING OF DEW POINT TEMPERATURE

If the water in the pipes has a temperature of 6°C the dew point temperature must be lower than 6°C.

This means that the dehumidifier must be on and running if the dew point temperature is higher than 6°C and it has to continue running until the temperature is a little lower than 6°C. We recommend a dew temperature start = 6°C.

The control must include a lower value, which means that the dehumidifier stops running at temperatures which are lower than the lower temperature limit.

We recommend a dew temperature stop = 5°C.

## SETTING OF RH VALUE

In this case the RH value for start is set at RH start = 60% and RH stop = 57%.

At temperatures higher than 13°C the regulator will control on basis of the dew point temperature, and at temperatures under 13°C the regulator will control on basis of the relative humidity, viz. RH 60%.

## REGULATING CHARACTERISTIC

The regulating characteristic is shown as the grey curve below.

