

Taking a closer look at...

Enthalpy Control



Watch this short video that explains the difference between dew point and enthalpy control.

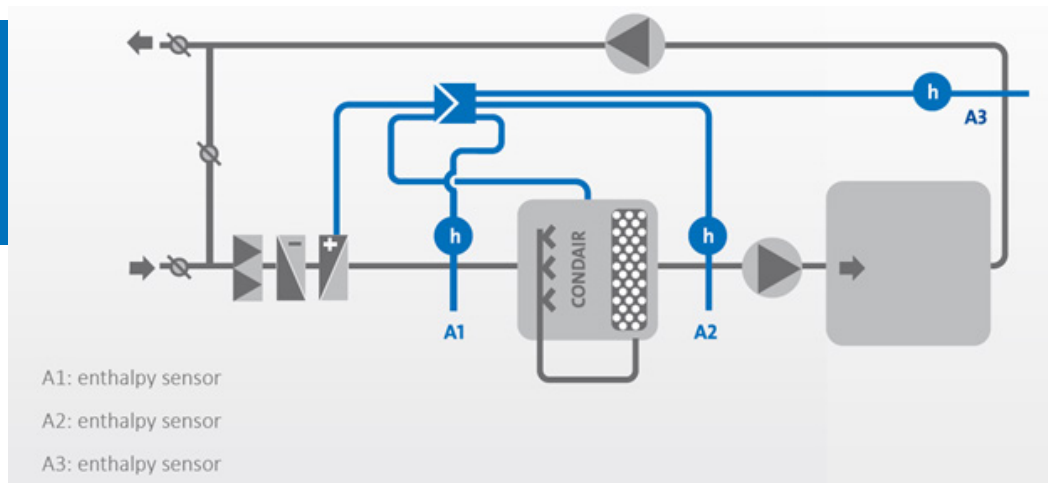
What is Enthalpy Control?

In adiabatic humidification systems that allow continuously adjustable output control, optimal results are achieved using enthalpy control.

A distinguishing feature of enthalpy control is that a preheating radiator which heats the system air until the target enthalpy is reached is installed only upstream of the humidification system. Controlled humidification then takes place until the desired air condition is reached. An additional reheater is not required in the humidification operation.

This control procedure offers the great advantage of allowing very cost-effective humidification operation with small quantities of flush water. Moreover, hygiene safety is boosted by comparably minor exhaust air relative humidity.

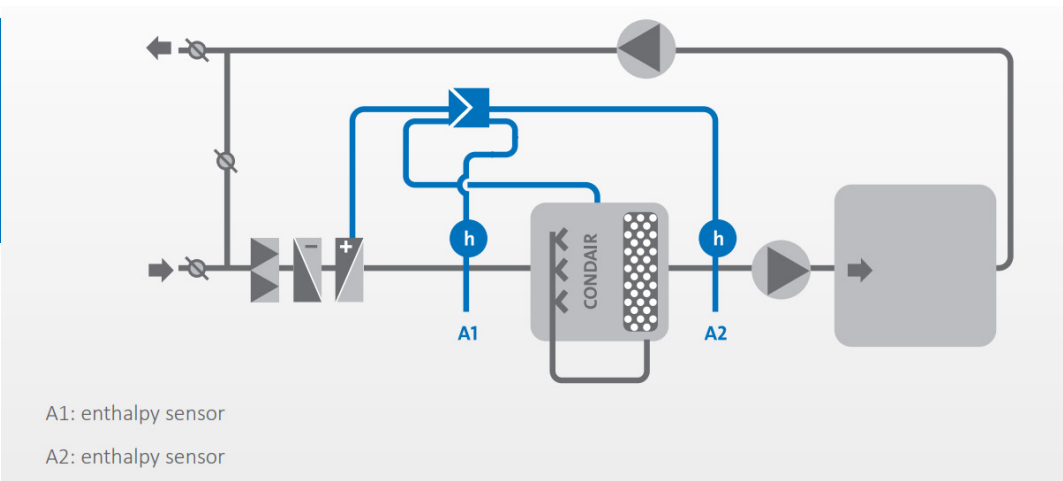
EXHAUST AIR CONTROL



The enthalpy sensor (A3) measures the exhaust air enthalpy and compares this with the specified setpoint. The enthalpy sensor (A1) controls the preheater until the target enthalpy is reached. The adiabatic humidifier is likewise controlled through the enthalpy sensor (A3). The enthalpy sensor (A2) has a safety function and limits the humidifier output at excessively low air temperatures (suitable functionality of the

controller required!). The use of an additional safety humidistat in the air supply duct may be necessary in humidifiers which atomize water directly in the air ducts (high-pressure and ultrasonic atomizers). Important: Fan heat and room thermal loads must be considered during planning since they have an effect on humidifier enthalpy. If this is too low, the evaporation output decreases.

INPUT AIR CONTROL



As long as system engineering requirements make it necessary, supply air control is also possible in adiabatic humidification systems. However, due to the low storage mass between steam distributor and humidity sensor, the rating of the controlled system is higher. This type of control is especially suitable for a combination of central adiabatic humidification with higher humidification output and adjacent zone rehumidification using electrical steam generators. The rehumidification, in turn, can then take place with an exhaust air humidity control. Incidentally, this variant offers the already previously described benefits of enthalpy control in continuously adjustable adiabatic humidification systems.

The enthalpy sensor (A2) measures the supply air enthalpy compared to the specified setpoint. The enthalpy sensor (A1) controls the preheater until the target enthalpy is reached. The adiabatic humidifier is likewise controlled through the enthalpy sensor (A2). The use of an additional safety humidistat in the air supply duct may be necessary in humidifiers which atomize water directly in the air ducts (high-pressure and ultrasonic atomizers). Important: As long as the enthalpy sensor (A2) is installed downstream of the supply air fan, fan heat must be taken into account since it has an effect on humidifier enthalpy. If this is too low, the evaporation output decreases.