CONDAIR HP

In-duct high-pressure
spray humidifier

Humidification and Evaporative Cooling

Low energy humidification and evaporative cooling

Water pump and RO treatment station
Removes minerals from the supply water and pressurises it directly to the nozzle grid.

Control panel
The user interface panel, controlled by a Siemens Programmable Logic Controller (PLC), has a clear and easy to use touch screen.

Integrated RO system
An optional reverse osmosis system to remove minerals from the supply water, ensuring dust-free, hygienic humidification.

Energy-efficient RO pump
A high-quality Grundfos electric motor provides low power consumption and reliable operation.

Stainless steel high-pressure pump
A high-pressure, water-lubricated, oil-free pump provides water at around 70bar.

Stage valve block
The valve block provides up to 15 stages of output for +/-4%RH control.

Spray nozzle grid
Precision manufactured high-quality, stainless steel nozzles atomise water into a fine mist, evenly spread across the duct to provide uniform humidification.

Droplet separator
Removes unevaporated water droplets from the air stream.

Droplet separator drain

Humidification section drain

CONDAIR HP

In-duct high-pressure spray humidifier

The Condair HP is a high-pressure, low energy, in-duct spray humidifier delivering adiabatic humidification and cooling to air handling units (AHU) and ducts.

A single high-pressure pump station is capable of supplying spray nozzles in multiple AHUs with up to 1,300kg/hr of humidity.

As well as a large humidification capacity the system can provide up to 884kW of adiabatic cooling from just 2.2kW of consumed electricity.

A control accuracy of ±4%RH is achievable with up to 15 stages of output across the nozzle grid, making the Condair HP suitable for a wide range of applications.

Humidify up to four AHUs from one pump station with up to 1,300kg/h of moisture

Precision manufactured, impeller type high pressure nozzles generate an extremely fine spray

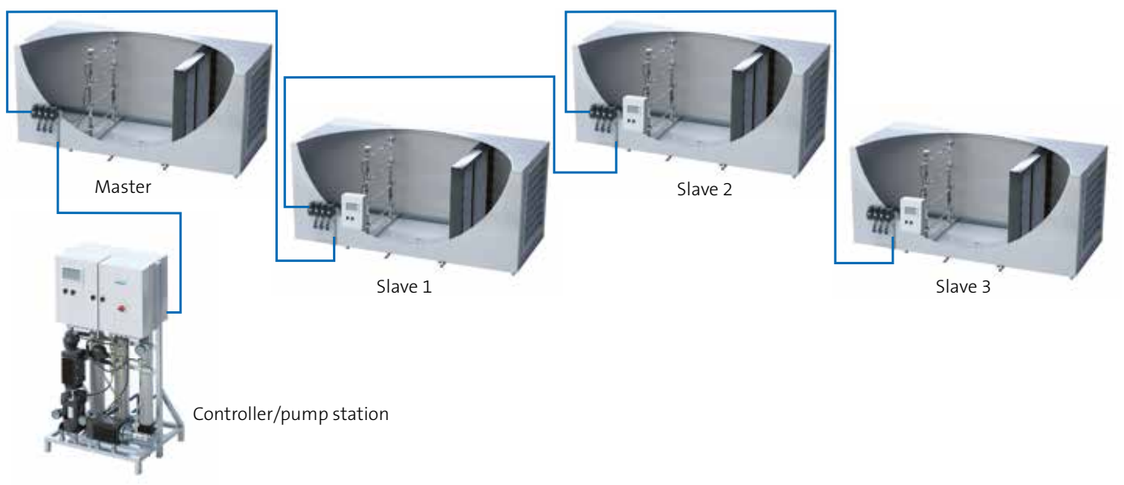
One humidifier, multiple AHUs

The Condair HP can offer humidity control to multiple AHUs or ducts, from a single high-pressure pump station, with local regulation to each nozzle grid.

Flexible capacities
This master/slave configuration can be used in a wide range of applications where up to 1,300kg/hr of humidification is required.

The master control unit is built into the pump station and consists of an easy to operate Siemens PLC, which regulates the stage valves and adjusts outputs to the required levels.

Separate control
With multiple zones, each slave is equipped with a separate controller, although all the operating parameters can be viewed or edited from the master control.



Premium quality components

The Condair HP is manufactured in high-quality materials to provide long lasting and reliable operation.

Uniform distribution
An innovative nozzle manifold design ensures that the spray is uniform across the duct and is largely absorbed within a short distance up to 1.3m. The water evaporates quickly and efficiently into the air-stream and avoids the need for long humidifier duct sections.

No compressed air
Precision manufactured stainless steel, high-pressure nozzles deliver an extremely fine spray of water droplets, without the need for compressed air.

Low maintenance pump
The water-lubricated, high-pressure stainless steel pump requires no oil or belt changes and is guaranteed for 8,000 hours, ensuring years of trouble-free operation. It is mounted directly onto a high quality, energy efficient Grundfos electric motor.

GRUNDFOS

Running costs can be 65% cheaper than an electric steam humidifier

Hygiene is ensured with regular flush cycles to reduce bacterial growth in the water

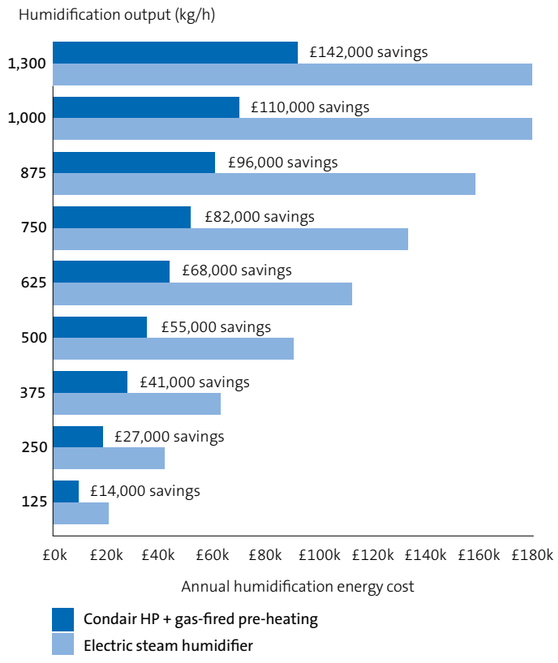
Low energy humidification and adiabatic cooling

In-duct adiabatic humidifiers can significantly reduce the operating cost of a building's humidity control when compared to traditional electric steam humidifiers.

As moisture is absorbed using heat from the air, rather than by electrically heating water to create steam, the main energy source can be shifted from electricity to gas. By warming the air prior to the humidifier with gas-fired heating, the exact same amount of energy is consumed but as gas is much cheaper, the humidification system's overall operating cost is reduced.

If it is possible to recover waste heat from the building to pre-heat the air stream prior to the humidifier, the energy cost of Condair HP humidification is a tiny fraction in comparison to using electric steam humidifiers.

Adiabatic cooling
The Condair HP can also be used in the summertime to provide low energy adiabatic cooling to an air handling unit. For every 1kg of humidity absorbed by the air around 0.68kW of cooling is also delivered. As a single Condair HP can provide up to 1,300kg/h, the system can supply approximately 884kW of adiabatic cooling per hour, while operating on around just 2.2kW of electricity.



Based on full humidifier output for 2,500 hours per year, gas at 3p/kW and 80% efficient pre-heating, and electricity at 9p/kW and a 94% efficient electric steam humidifier.

Safe and hygienic operation

The Condair HP operates on pure reverse osmosis (RO) water, ensuring the water being introduced to the air is hygienic.

Regular automatic flush and drain cycles prevent water from remaining in the pipelines of the humidifier long enough to stagnate.

An optional ultra-violet sterilisation system on the water pump station offers additional safeguards against microbial growth.

Condair A/S is ISO 9001 and 22000 (HACCP) certified.

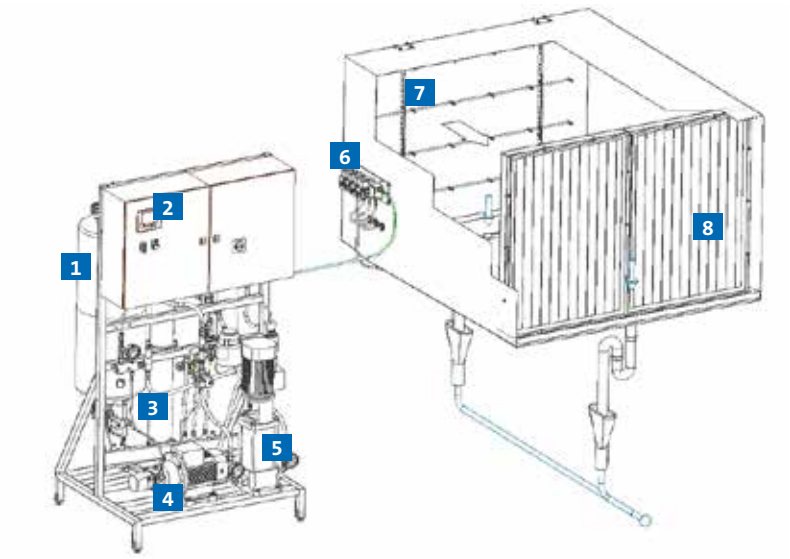
Food Safety Management System
FORCE Certification
ISO 22000

Options

- Reverse osmosis water treatment system
- Conductivity sensor
- Integrated water meter
- UV water treatment
- Self-regenerating ion exchange softener
- Activated carbon pre-filters
- Modbus TCP / IP
- High capacity variable frequency drive (VFD)

System overview with RO option

1 RO water storage tank
2 Control panel
3 RO membrane
4 High-pressure pump
5 RO pump
6 Stage valve block
7 Nozzle grid
8 Droplet separator



Technical data HP

Humidifier unit		
Specification of filter before humidifier		min. F7
Air velocity, range of use		0.5 ... 4.0 m/s
Pump station (control and high-pressure pump)		
Dimensions of pump station (W x H x D)		660 x 1300 x 500 mm
Weight of pump station (dry)		70 kg - 100 kg
Piston pump motor supply voltage		380...480V/3N~/50...60Hz
		208...240V/3N~/50...60Hz
Nominal output and current consumption		
Unit	Pump capacity range l/h (min/max)	Power Consumption kW
HP100	10-100	0.9
HP200 VFD*	5-200	1.1
HP300	30-300	1.1
HP500	50-500	2.1
HP500 VFD*	35-500	2.1
HP800	80-800	3.0
HP800VFD*	45-800	3.0
HP1300 VFD*	60-1300	3.9
Working pressure of humidifying pump		60-70 bar
Admissible supply water temperature		
Before piston pump		2...15 °C
Inlet pressure		1...5 bar
Admissible water type		RO water, DI Water
Control signals		0...10 VDC, 0...20 mA, 4...20 mA, on/off
Control accuracy		up to ±4 %RH

*High pressure pump driven by variable frequency drive (1000-1800 rpm)

Technical data HPRO

Humidifier unit		
Specification of filter before humidifier		min. F7
Air velocity, range of use		0.5 ... 4.0 m/s
Pump station (RO and high-pressure pump)		
Dimensions of pump station (W x H x D)		860 x 1600 x 700 mm (HPRO100-500)
		1400 x 1600 x 700 mm (HPRO800)
External tank HPRO 500 (W x H x D)		955 x 600 x 600 mm
External tank HPRO 800 (W x H x D)		1250 x 800 x 800 mm
Weight of pump station (dry)		125kg - 250kg
Piston pump motor supply voltage		380...480V/3N~/50...60Hz
		208...240V/3N~/50...60Hz
Nominal output and current consumption		
Unit	Pump capacity range l/h (min/max)	Power Consumption kW
HPRO100	10-100	1.5
HPRO200 VFD*	5-200	2.0
HPRO300	30-300	2.0
HPRO500	50-500	3.0
HPRO500 VFD*	35-500	3.0
HPRO800	80-800	4.0
HPRO800VFD*	45-800	4.0
Working pressure of humidifying pump		60-70 bar
Admissible inlet water type		Drinking water / softened water
Admissible supply water temperature		
Before piston pump		2...15 °C
Inlet pressure		2...7 bar
Reverse Osmosis (RO)		
RO Salt rejection		95-99 %
Recovery with softener		75 - 80 %
Recovery without softener		50 - 55 %
Permeate / outlet		5 - 30 µS/cm
Control signals		0...10 VDC, 0...20 mA, 4...20 mA, on/off
Control accuracy		up to ±4 %RH