High
Efficiency
Solutions.

CAREL

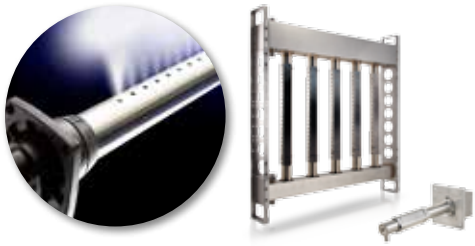
Humidity matters!
CAREL solutions
for your humidification needs

heaterSteam:
electric heater steam humidifier

The ideal humidifier for technological or medical applications that require precision, reliability and a perfectly sterile environment. These units can operate on both drinking water and demineralised water. Using demineralised water guarantees practically maintenance-free operation.

- reliability and total protection against overheating;
- precision ± 1% RH and complete modulation;
- maximum hygiene;
- models from 2 to 80 kg/h

heaterSteam uses flat heaters with a large heat exchange area in a stainless steel cylinder. Each heater contains a temperature sensor (PTC), a CAREL exclusive, that protects it against overheating eand damage in any situation. In the full optional version, the heaters are coated with a non-stick layer to simplify descaling.
The sophisticated controller can accept a variety of external control signals, and manage both a main control probe and a limit probe, so as to modulate steam production and avoid condensation in the duct. Guaranteed precision of ± 1% RH and range of modulation from 0 to 100%.
Modulation is managed by solid state relay without mechanical contacts.
Automatic washing and refill cycles, and a choice of materials guarantee total hygiene.
For all steam humidifiers, a wide range of accessories is available: humidity probes for ducts and rooms, steam distributor for ducts (from 30 cm to 205 cm), steam nozzles and hoses, and condensate drain hoses.



steam distributor

heater

Precision
Controls relative humidity with a precision of 2%, modulating production between 0 and 100%.

Reliability
The embedded temperature sensors protect the heaters against overheating

Easy maintenance
The large heaters with Niflon coating are easy to clean from lime scale.

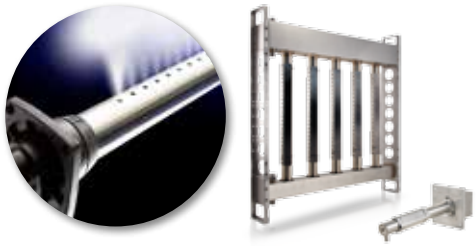
gaSteam:
gas-fired steam humidifier

Steam humidifier for heavy-duty applications, where the energy cost is important. Suitable for drinking or demineralised water; can operate on either natural gas or LPG, and is installed like a normal heating system.

- LPG or natural gas;
- energy efficiency 92-96%;
- class C rating;
- pre-mix burner operating at negative pressure;
- ±2% precision on set point;
- models from 45 to 80 kg/h

burner

gaSteam is fitted with a pre-mix gas burner operating at negative pressure in a room-sealed chamber, featuring a wide range of modulation. The intricate layout of the stainless steel heat exchanger guarantees the highest energy efficiency currently available on the market (up to 96%). The system of redundant sensors and controllers means the units are approved in accordance with the main international safety standards.
The range of modulation is from 25% (12.5% for the largest model) to 100%; precise control of ±2% RH.
Like all CAREL controllers, the gaSteam controller, as well as accepting various types of external signals, can manage both a main control probe and a limit probe, so as to modulate steam production and avoid condensation in the duct. Modbus® connectivity is available as standard, as is master-slave connection to similar units.
The range comprises 45, 90 and 180 kg/h models.



steam distributor

Stainless steel heat exchanger

Savings and the environment
gaSteam works by burning natural gas or LPG, a clean and economical energy source.

High efficiency
The advanced design of the stainless steel heat exchanger ensures higher efficiency, up to 96%.

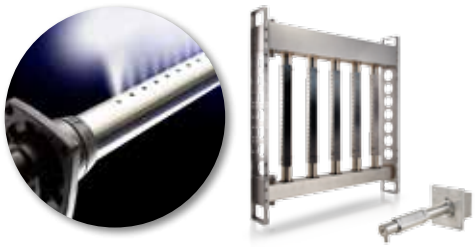
Safety
A complete system of sensors and controllers guarantees the highest levels of reliability and safety.

humiSteam:
immersed electrode steam humidifier

The rational choice!
The result of CAREL's forty-year experience in the field of steam humidifiers, and the most appropriate choice for a wide variety of air humidification applications: commercial spaces, offices, industrial facilities and steam baths.

- three types of control;
- models from 1.5 to 130 kg/h;
- control probe and modulating limit probe;
- disposable or openable cylinders;
- auto-tuning based on type of water

humiSteam produces steam from drinking water with a conductivity between 75 and 1250 µS/cm, and can automatically adapt to the characteristics of the feedwater, optimising operating time without requiring maintenance. The wide range of modulation (from 20% to 100%) and the sophisticated electronic controller allow precise control of room humidity; the limit probe avoids condensate forming in the duct, in any situation.
humiSteam is fitted with the patented AFS (anti foaming system) that detects and manages the entrainment of foam, thus preventing droplets of water being carried by the steam.
The humiSteam range comprises three models: Basic, X-Plus and Wellness, designed for steam baths. All controllers offer Modbus connection; the X-Plus and Wellness models also offer scheduled operation. humiSteam Wellness can moreover independently manage all the typical actuators in professional steam baths: lights, fans, metering pumps for essences and others.



steam distributor

cylinder with electrodes

Easy to use
Wide display with texts in 9 languages and graphs of operating status and diagnostics.

Fast maintenance
Long-life cylinders with quick couplings for fast and hassle-free maintenance.

Quality and reliability
CAREL is the world's number one manufacturer of immersed electrode systems, leading the way in both technology and quality.

ultimateSAM:
high energy efficiency steam distributor

Significant energy savings by minimising condensation and reducing the heat lost in the AHU/duct.
Uses steam from a pressurised system or produced by a humidifier.

- minimum non-wetting distance;
- uniform, droplet-free distribution;
- reduced condensation with air-layer insulation.

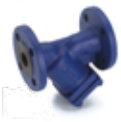
ultimateSAM (Short Absorption Manifold) is a steam distributor for ducts that is suitable for both pressurised steam (0.01–4 barg) and for humidifiers operating at atmospheric pressure. The air-cushion thermal insulation reduces heat loss to the air in the duct, minimising condensation.

ultimateSAM is sized to measure according to steam flow-rate and duct dimensions, so as to ensure uniform steam distribution, without droplets of water, and giving the shortest possible non-wetting distance.
All the metal parts are made from AISI 304 stainless steel, to ensure hygiene and maximum operating life. The unit is supplied with a vast choice of steam valves, complete with electric actuators for flow-rate modulation.
The range include multi-pipe models with bottom or top feed (SAB*/SAT*), for flow-rates from 20 to 1,100 kg/h, and SA0* single-pipe models, with flow-rates from 20 to 140 kg/h.

modulating valves

inlet connections

steam traps and condensate drains



Y strainers

Energy efficiency
ultimateSAM maximises energy saving. The insulated models reduce heat gain and condensate formation.

Precision
Suitable for precision humidification thanks to uniform steam distribution in the AHU/duct and the use of modulating valves.

Short non-wetting distance
ultimateSAM minimises the non-wetting distance of the steam flow thanks to uniform distribution across the entire height.

humiFog multizone:
high pressure atomising humidifier

Energy saving and hygienic safety, for adiabatic humidification and cooling.
The atomisation humidification system for industrial, commercial and hospital applications that combines extremely high efficiency and precision with hygienic safety.

- maximum hygiene (VDI6022) without chemical additives;
- ±1% RH precision and wide range of modulation;
- up to 1,000 kg/h (5,000 kg/h in the custom version);
- models with stainless steel pump, silicone-free models for automotive applications;
- seismic certification.

atomising rack

droplet separator

Atomising water at high pressure (70 bars) using special nozzles, the unit produces a very fine and uniform aerosol, which is easily absorbed in the air even over short distances. Maximum capacity is 1,000 kg/h (standard) and 5,000 kg/h (custom). Made-to-measure stainless steel racks are available for duct applications, plus a droplet separator with very low pressure drop and water drain, in the fully stainless steel or fibreglass versions. Distributors and blowers are available for direct humidification in rooms.

humiFog offers both high precision (± 1% RH) and a wide range of modulation, combining the effect of the inverter that controls pump flow-rate, with the action of the solenoid valves that vary the active number of nozzles. Consequently, ideal applications are those that require precision and reliability – typical examples are the aerospace, automotive and pharmaceutical industries – and to manage up to six ducts with independent set points. In addition, one single pump can manage two atomisers in the duct for summer/winter operation (indirect evaporative cooling/humidification).

humiFog has been designed with special care to hygiene and safety, without any water recirculation or retention when the unit is not operating, and is certified in accordance with VDI6022 without needing chemical biocides. The system activates automatic washing cycles at set frequency, in compliance with local regulations.

Very low power consumption
Just 4 W of power consumed for each liter/hour of capacity, less than 1% of any steam humidifier

Summer/winter operation
Cools the air in summer without increasing humidity, exploiting indirect evaporative cooling

Maximum hygiene
Product certified in compliance with VDI6022 using pure and simple water. The water is not recirculated and the system is automatically emptied after each operating period.

mc multizone:
compressed air atomising humidifier

The mc multizone adiabatic humidification system is ideal for humidifying industrial environments and large volumes of air, in air handling units or rooms (e.g. cold rooms, textiles industries...).

- up to 6 zones, with independent set points.
- easy to install: automatically balances the compressed air lines;
- periodical nozzle self-cleaning;
- 60 and 230 kg/h models.

nozzles

The system uses compressed air to atomise the water into very fine droplets that evaporate spontaneously in the air, humidifying and cooling it. The new electronic controller manages the water and compressed air supply to the nozzles, plus all the automatic cycles, such as nozzle cleaning and washing.
In addition, the unit can control the humidity independently (up to 6 zones) using a Master-Slave layout. It comes with a large LCD and a 6 button keypad for immediate and user-friendly access to information and parameters.
mc multizone ensures a very high level of hygiene thanks to automatic emptying of the water line whenever the unit stops and automatic periodical washing when the unit is not operating. In addition, a UV sanitising lamp is also available.

Guaranteed hygiene
Automatic procedure to avoid stagnated water. UV sanitising system

Multizone
Multiple cabinets can be connected in a master-slave layout for multizone applications.

Self-cleaning
The nozzles, made from AISI316 stainless steel, are available with different capacities, and feature a patented automatic cleaning system so as to minimise maintenance.

humiSonic:
ultrasound humidifier

The optimum solution for providing the humidity needed in small HVAC (fan coils) or commercial refrigeration systems (refrigerated showcases), and many industrial applications. All with maximum care for hygiene and safety.

- energy saving! Ultrasound humidification consumes over 90% less energy than steam generation!
- comfortable conditions guaranteed by controlling humidity.

dedicated humidity probe

flow sensor

distribution system

humiSonic exploits the high frequency vibrations of the piezoelectric elements immersed in water to produce very fine droplets (1-5 microns) that evaporate extremely quickly. humiSonic has a built-in fan and hose to carry the moisture to where it is needed; in the case of ducts air or pressurised environments, an intake hose can also be supplied, so as to create a closed circuit and equalise operating pressure.

humiSonic has a built-in control board, can communicate via Modbus ®, control other humiSonic units in a cascade, read a humidity probe and adjust production based on a set point, accept an external signal (including from an inductive sensor that detects, for example, whether the fan on a fan coil is operating). It can be "hot" connected to a keypad/display for setup and diagnostics.
A truly complete controller, unique on the market for this product class, which solves several problems for those wanting to integrate humiSonic into their system.

humiSonic is available with two capacities: 0.5 and 1 kg/h.
The humidity production section can be easily removed for maintenance, leaving the support that encloses the electronic controller. Maximum care has been paid to hygiene: humiSonic never contains stagnant water, runs regular automatic rinsing cycles, and is made using a special bacteriostatic plastic.

Energy saving
Ultrasound humidification features very low power consumption (40 W). humiSonic is a solution that meets the latest energy saving expectations.

Hygiene
This is one of the main strengths of humiSonic, ensured by completing periodical washing cycles in which the tank is completely emptied, and the gradual release of the silver ions contained in the tank.

Easy installation and maintenance
Its compact and ergonomic design make humiSonic easy to install (both on new generation fan coils, and retrofits on existing units) and service.

humiDisk:
centrifugal humidifier

The practical and flexible solution: a small, sturdy and easy to install humidifier; ideal for cold rooms and small spaces, paper and printing industries, textile industries.

electrical panel

humidistat

- easy to install;
- minimum maintenance;
- automatic emptying cycles;
- adjustable capacity.

Simple and effective, works on mains or demineralised water. A spinning disk atomises the water into very fine droplets that can be easily absorbed by the surrounding air, humidifying and cooling at the same time.
CAREL supplies electrical panels fitted with electronic humidity controller or simple low cost mechanical humidistats, allowing one or more humiDisk units to be operated in parallel. The electrical panels also ensure a wash cycle whenever the humidifier starts.
Automatic draining of the water tank after each operating cycle guarantees hygiene and makes the appliance ideal for the storage of foodstuffs, cold rooms or other small industrial environments and stores.
The humidifier can be fitted with an optional antifreeze heater that is activated at temperatures around 0 °C, allowing operation down to -2 °C.

Hygienically safe
Very small water tank, frequent refill cycles, washing procedure at the start of each cycle.

Every type of water
Works on potable mains and demineralised water.

Low energy consumption
around 34 W per kg/h of capacity.

optiMist:
evaporative cooling and humidification

Two functions in just one unit! optiMist is the smart solution to replace wet deck systems, with higher performance and avoiding hygiene problems, expensive periodical maintenance and energy wastage due to pressure drop in the duct.

"Green" AHU: global energy saving inside the air handling unit by combining evaporative cooling and adiabatic humidification.

optiMist combines the simplicity of a maintenance-free medium pressure paddle pump, with a powerful electronic controller capable of integrating perfectly into an AHU.
optiMist can operate on both demineralised water and drinking water. The pump is controlled by an inverter that adjusts flow-rate according to load, avoiding waste; the distribution system for ducts is made from stainless steel pipes with special nozzles and compression fittings for easy assembly. The droplets produced are easily absorbed into the air stream, which is humidified and cooled. Indeed, optiMist can be used to both humidify and cool, combining the action of the inverter with sequential, two-step modulation; alternatively, it can work in both humidification and indirect evaporative cooling modes, supplying two separate distribution racks. Six models are available, with a maximum flow-rate from 50 to 1,000 L/h.
Like all CAREL humidifiers, optiMist is designed in accordance with VDI6022 guidelines, and special care has been paid to prevent any stagnant water from remaining inside the unit when not operating.

drain valves

differential pressure switch

droplet separator

Energy saving
optiMist guarantees overall energy savings in the AHU of 68 kW each 100 l/h of evaporated water, with very low power consumption and pressure drop (30 Pa).

Precision
optiMist can continuously and precisely modulate the production of atomised water. This means the potential of evaporative cooling can be fully exploited without wasting water.

Integrated solution
optiMist is a single solution that efficiently manages direct evaporative cooling (DEC), indirect evaporative cooling (IEC) and adiabatic humidification.

chillBooster:
evaporative cooling

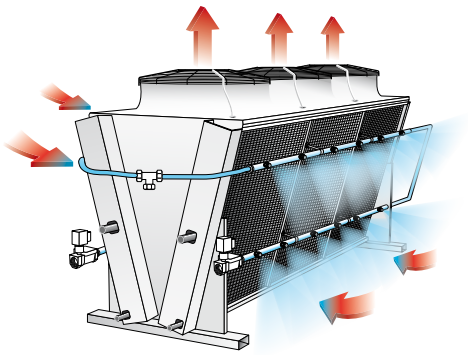
Evaporative cooler that works by atomising water into very fine droplets. The droplets evaporate spontaneously, removing heat from the air, which is thus humidified and cooled. The unit uses a paddle pump to pressurise the water, which is then atomised through special spray nozzles.

- Energy saving on chillers and drycoolers through evaporative cooling.
- chillBooster has an extra gear to handle peak demand on the hottest days of the year.

chillBooster is an evaporative cooler that increases the efficiency of chillers and drycoolers; it cools the air before this flows through the coil, thus saving on some of the power consumed by the compressor.

chillBooster atomises water into very fine droplets that evaporate spontaneously, cooling the air. The coil is thus cooled by a flow of colder air and droplets of water, allowing more favourable operating conditions.

This allows liquid coolers and condensers to deliver their rated capacity even during the hotter periods of the year, which often coincide with operation at maximum load. All without costly system oversizing.



fast connections

atomising nozzles

Very low energy consumption

ChillBooster has extremely low power consumption: a system for drycoolers with an air flow-rate of 200,000 m3/h atomises 1000 l/h, with power consumption less than 0.7 kW!

Ideal for retrofits

The IP55 pumping unit and easy-to-install modular system ChillBooster ideal for retrofits on chillers, drycoolers and liquid coolers.

Easy to install

The water distribution system uses spray pipes available in various lengths, quick couplings and flexible connection pipes, making ChillBooster easy to install, without requiring special tools or welding equipment.

Applications

+3000018EN - 3.0 - 19.02.2015

Office buildings

Humidification and/or cooling for optimum comfort.

Hospitals

Health, wellness, safety and conformity to standards through humidification of wards and operating theatres.

Libraries and museums

Humidification for storing books, paintings and works of art in ideal temperature-humidity conditions.

Pharmaceutical industry

The right humidity for the production process is maintained at all times.

Painting systems/booths

Maintenance of the humidity level to ensure quality and uniformity of the painted product.

Tobacco industry

For processing, seasoning and storage of tobacco at the right humidity.

Direct/indirect evaporative cooling

Humidity control eliminates the risk of electrostatic discharges. Evaporative cooling maximises energy savings.

Hotels and call centers

Humidification and/or cooling for optimum comfort and to prevent illnesses caused by dry air.

Textiles industry

Humidification to limit dust dispersion and breakage of fibres; moreover, evaporative cooling "absorbs" the heat generated by the machinery.

Food industry

Humidification for the production of biscuits, pasta and all hygroscopic materials and ingredients.

Printing and paper industries

To ensure productivity and final product quality.

Timber industry

For processing and storing wood and timber.

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