



air humidification systems
isothermal and adiabatic humidification



Humidity matters!
CAREL solutions for your humidification needs

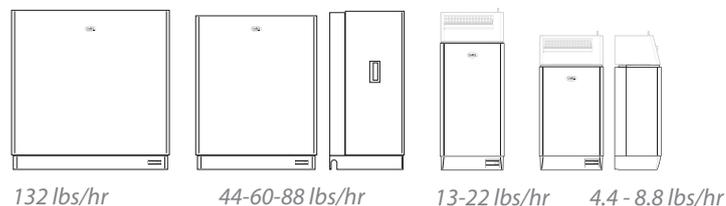
heaterSteam: electric heater steam humidifier

The unit can be used with both potable and demineralized water when wanting to minimize periodical cleaning. Ideal for humidifying technological or medical environments, where maximum steam purity and extended maintenance-free operation are required.



steam distributor

heater



132 lbs/hr

44-60-88 lbs/hr

13-22 lbs/hr

4.4 - 8.8 lbs/hr

- reliable heaters in die-cast aluminium housings;
- protection against overheating by PTC probes embedded in the heaters;
- easy maintenance ensured by Niflon coating on the heaters;

The die-cast aluminium heater housings with integrated PTC temperature probe (CAREL patent) guarantees reliability and protection against overheating, even without maintenance. In the full optional version, the heaters have a Niflon non-stick coating that protects them against corrosion and prevents scale building up, making cleaning simpler. The modulating version connected to a control probe and to an optional limit probe, can operate with modulation from 0% to 100% with precision of $\pm 2\%$ RH. Pre-heating function also available to ensure the humidifier starts operating immediately. The range of heaterSteam models runs from 4.4 to 132 lbs/hr per hour, in the following models: basic (RH), full optional (RH) and for steam baths (temp)



Precision

Control precision of $\pm 2\%$ RH on set point and modulation from 0 to 100% of rated output.



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

Humidify and save!

Works on potable mains water and demineralized water from reverse osmosis.
The gas-fired humidifier that is installed like an ordinary heating system.



- LPG or natural gas;
- energy efficiency 92-96%;
- class C rating;
- pre-mix burner operating at negative pressure;
- modulation 25 to 100%;
- $\pm 2\%$ precision on set point

The gaSteam family of humidifiers stands out for very high overall efficiency, fully exploiting lower cost of gas fuel. The heat exchanger is made from aluminium alloy and coated with special non-stick corrosion-proofing treatment that prevents scale build-up. Steam production can be modulated continuously from 25% (12.5% for UG180) to maximum output, both with integrated controller and external control signal. gaSteam is approved by the main international safety organisations, as it includes redundant safety devices controlled by complete, user-friendly software. Models available for nominal 100, 200 and 400 lb/hr of steam.



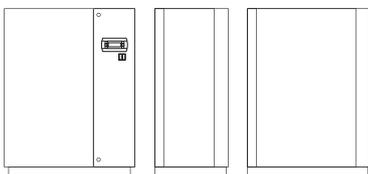
steam distributor



Aluminium heat exchanger with nickel coating



burner



100 lbs/hr - 200 lbs/hr - 400 lbs/hr



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 large aluminium alloy heat exchanger ensures maximum efficiency, up to 96%



Safety

Guaranteed by a system of redundant sensors.

humiSteam: immersed electrode steam humidifier



- three versions available;
- capacity 2.2 to 287 lbs/hr;
- control probe and modulating limit probe;
- disposable or openable cylinders;
- drain pump.

humiSteam operates on potable water with conductivity between 75 and 1250 $\mu\text{S}/\text{cm}$ and its control software automatically adapts to the characteristics of the water, optimizing operating life without maintenance.

humiSteam X-plus (or "X"), with integrated control and limit probe, with capacities ranging from 3.3 lbs/hr to 287 lbs/hr (1 to 130 kg/h).

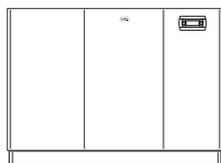
All humiSteam models offer standard Modbus[®] communications, with LONtalk and BACnet available as options. The X-plus model also features **automatic time band operation** and the option of other communication protocols.



cylinder with electrodes



steam distributor



198 to 286 lb/hr



143 lbs/hr



55-77-99 lb/hr



range is 3.3 to 40 lbs/hr



Easy to use

Backlit LCD for clear understanding of operating status and diagnostics, in 5 languages



Fast maintenance

Cylinders with quick coupling power connectors for easy, fast and risk-free maintenance



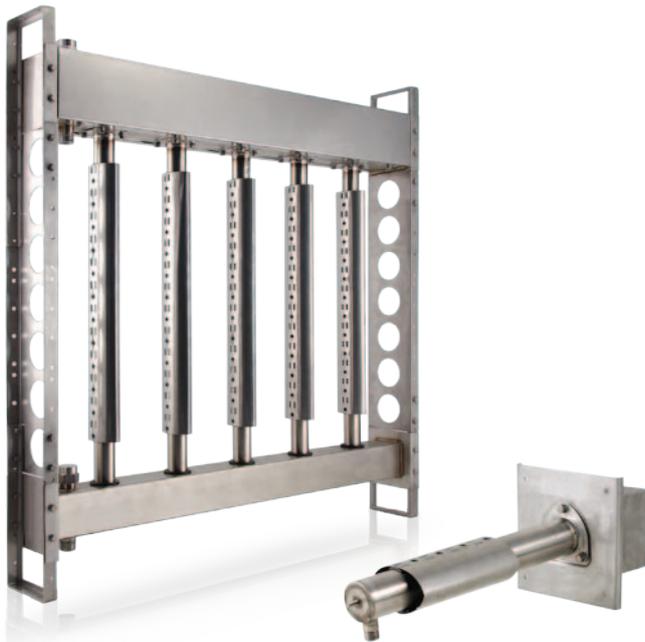
Quality and reliability

continuous modulation of steam production from 20% to rated output. Fast start-up.

ultimateSAM: high energy efficiency steam distributor

Significant energy savings by minimizing condensation and reducing the heat lost in the AHU/duct.

Uses steam from a pressurized system or produced by a humidifier.



- short non-wetting distance (even ≤ 0.5 m);
- only dry steam is delivered;
- less condensation due to air cushion insulation;
- uniform steam distribution.

ultimateSAM is a distributor for steam - pressurized (0.01-4 barg) or at atmospheric pressure (humidifier) - designed to uniformly and effectively deliver dry steam into ducting or an AHU; non-wetting distance is therefore very low (even ≤ 0.5 m). The unit has been designed to be made "to measure" for the AHU/duct, guaranteeing low heat gain (max 35.6°F) and very low condensate formation, due air cushion insulation on the nozzles and heat insulation on the manifolds. All metal parts inside the AHU/duct are made from AISI 304 steel to guarantee hygiene and long operating life. Valves are available with electric actuators for precise steam modulation. Steam flow-rates are: multi-pipe model SAB*/SAT* 44 to 245 lbs/hr, single-pipe model SA0* 44 to 308 lbs/hr.



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 atomizing humidifier

Energy saving and hygienic safety!

This is a very high efficiency pressurized water humidification system air handling units in hospitals, commercial and industrial environments, combining adiabatic humidification and evaporative cooling.

- continuous modulation across a wide range (3 to 100%);
- up to 1322 lb/hr in the standard solution; up to 11,000 lb/hr with a custom solution;
- up to 6 independent zones;
- silicone-free versions



atomizing rack



droplet separator

humiFog multizone can be used for precision applications (± 2 %rH) or to manage a maximum of 6 zones independently, using zone controllers served by a single pumping station, allowing significant savings.

It also has the dual function of **indirect evaporative cooling in summer** (without adding humidity, via heat recovery on exhaust air) and **humidification in the duct in winter**; also available for **direct humidification in rooms**.

Atomizing water at high pressure (1015 psi/70 bars) using special nozzles, humiFog multizone produces a very fine and uniform aerosol, which is easily absorbed in the air even over short distances. The stainless steel rack with atomizing nozzles, made to measure for the AHU, simplifies installation.

humiFog multizone is hygienically safe and is VDI6022 certified for use in AHUs/ducts.



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 atomizing humidifier

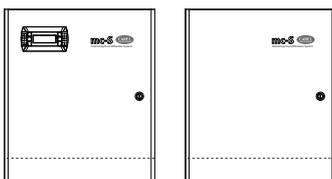
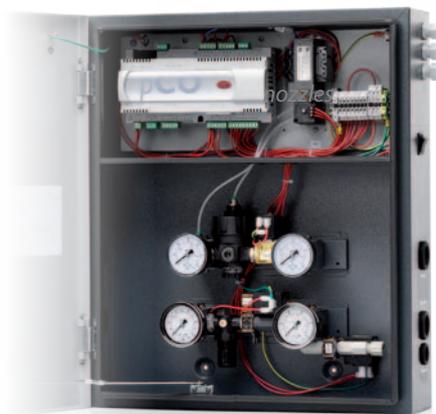
The mc multizone adiabatic humidification system is ideal for humidifying industrial environments and large volumes of air, in air handling units or rooms (e.g. cold rooms, textiles industries...).



- easy to install:
automatically balances the compressed air lines;
- periodical nozzle self-cleaning.

The system uses compressed air to atomize the water into very fine droplets that evaporate spontaneously in the air, humidifying and cooling it. The 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 produce up to 2000 lb/hr 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. There are various models, differing in maximum capacity, type of control - ON/OFF or modulating, type of supply water, and Master or Slave.



master slave
132 - 507 lbs/hr



Guaranteed hygiene

Automatic procedure to avoid stagnated water.



Multizone

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

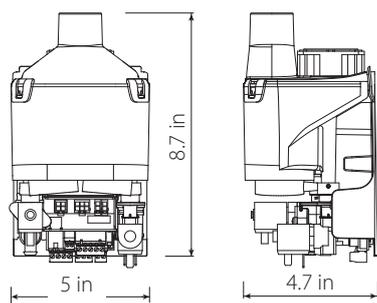


Self-cleaning

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

humiSonic: ultrasound humidifier

The new ultrasound humidifier designed to control the humidity in a specific environment. Installed inside a fan coil, this is the ideal solution for combining standard temperature control (ensured by the fan coil) with precise room humidity control.



dedicated humidity probe



flow sensor



distribution system

- energy saving! Ultrasound humidification consumes 98% less energy than humidifying with steam!
- comfortable conditions guaranteed by controlling the humidity.

The combination of precise air temperature and humidity control ensures comfortable conditions can be achieved and maintained in domestic and commercial environments.

Using high frequency vibrations of the piezoelectric oscillator, (1.7 MHz), humiSonic can produce very fine droplets, around 1-5 μm in diameter. The ducting between the coil and the air outlets means the atomized water is uniformly distributed in the fan coil supply duct.

Fitting humiSonic with a humidity probe and flow sensor (CT) gives a complete solution able to operate completely independently!



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.

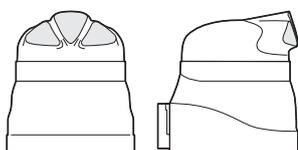


- easy to install;
- minimum maintenance;
- automatic emptying cycles;
- adjustable capacity on the humiDisk 65.

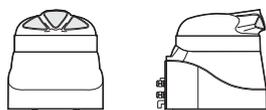
Simple and effective, works on potable or demineralized water. A spinning disk atomizes the water into very fine droplets that can be easily absorbed by the surrounding air, humidifying and cooling at the same time.

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 32°F, allowing operation down to 28.4 °F.



14.3 lbs/hr



2.2 lbs/hr



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 demineralized water.



Low energy consumption

around 34 W per kg/h of capacity.

optiMist: evaporative cooling and humidification

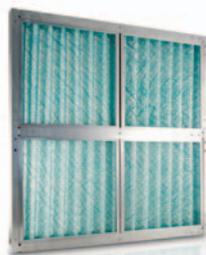
Humidifier and evaporative cooler that works by atomizing water into very fine droplets. The droplets evaporate spontaneously, removing heat from the air, which is thus humidified and cooled. The unit uses a paddle pump to pressurize the water, which is then atomized through special spray nozzles.



drain valves



differential pressure switch



droplet separator



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

Energy Saving

The rapid development of evaporative cooling in HVAC applications is due to its very low energy impact. Energy savings achieved with evaporative cooling are much more significant than other air-conditioning systems (for example, cooling by chiller). Adiabatic humidification, moreover, is much more energy efficient than steam humidification.

optiMist is a complete system that offers humidification and evaporative cooling in the same solution, making it ideal for use in AHUs (air handling units) both to humidify the supply air (direct evaporative cooling) and indirectly cool the incoming air stream, for example with a cross-flow heat recovery unit, thus increasing the AHU's energy efficiency.



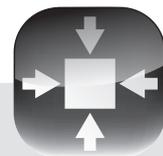
Energy saving

optiMist guarantees overall energy savings in the AHU of 68 kW each 26.4 gal/h of evaporated water, with very low power consumption and pressure drop (30 Pa).



Precision

optiMist can continuously and precisely modulate the production of atomized 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.

tERA

your new service ERA

Welcome to the new CAREL platform for centralized system management! tERA is the new platform that can quickly make your business into a provider of services.

- simple and fast access to all the information you need;
- optimize your work and become more competitive;
- offer your customers a cutting-edge proposal using the most advanced technology and your own unique skills



You can now exploit a new platform of services using the latest technology available on the market and widely used in other applications: the concepts of the internet, smart machines, cloud computing, wireless connectivity, smartphone and tablet applications are entering into the HVAC/R market in a completely new way.

Thanks to tERA, you can:

connect: system connectivity is simple and immediate, thanks to wireless transfer of useful information;

collect: operating parameters and alarms on units installed all over the world can be accessed for comparison and optimization from just one device;

process: reports and graphs on data and alarms let you quickly assess unit operating status and immediately make any required changes.

With tERA, you can optimize plant management and reduce maintenance costs to improve your customer service levels.



plug&play

Wherever your system,
Wherever you are...
...you can have your system in your pocket in just a few steps



Scalable solution

10, 100, 1000 systems
10, 100, 1000 users...
...the information you need will always be available



Your ideas

For all your new ideas...
For all your customers' needs...
...you have a simple tool to turn your ideas into reality

Applications



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 maximizes 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 fibers; 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.

Headquarters ITALY

CAREL INDUSTRIES Hqs.
Via dell'Industria, 11
35020 Brugine - Padova (Italy)
Tel. (+39) 0499 716611
Fax (+39) 0499 716600
carel@carel.com

Sales organization

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