



CAREL

gaSteam
gas-fired humidifier
for the highest-efficiency
humidification

Connected Efficiency

Gas-fired humidifier for applications with high steam requirements

Reliability and high thermal efficiency make it possible to exploit the lower cost of gas as fuel, while minimizing energy waste.

- **Models with steam production of 90, 200, 330, 400 and 660 lbs/h (990 lbs/h outdoor version only);**
- **modulation from 25 to 100% of rated capacity (from 12.5% for UG180 and UG300);**
- **maximum efficiency and safety thanks to the pre-mix burner equipped with a proportional gas valve.**

gaSteam is a green solution that is powered by natural gas, a clean and economical source of energy.

gaSteam can work on either methane or LPG, without needing to replace the burner, but rather simply modifying some burner calibration parameters.

Safety and certification

gaSteam is equipped with multiple safety devices, and is ETL and CE certified (assured by TÜV-DVGW); in addition, the flame control board is AGA certified. Thanks to its low NOx

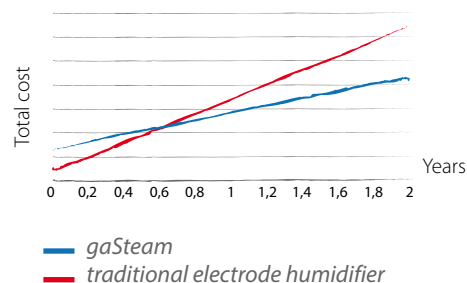
emissions, it is certified as a class 5 unit for models UG045 and UG090, and class 4 for models UG180, UG300 and UG450.

Energy saving

It is estimated using gas rather than electricity as the energy source to produce steam saves up to 70% on the energy bill for normal system operation. gaSteam is therefore the ideal choice for applications where steam is required for many hours a day, allowing significant savings in operating costs and a very fast return on investment.



Comparison between a traditional electrode humidifier and gaSteam



Values used: electricity 0.15 €/kWh, heat value of gas 31.75 MJ/m³, cost of gas 0.7 €/m³



High efficiency

The advanced design of the stainless steel heat exchanger, with a large heat exchange surface, ensures high efficiency (94-96%) and excellent corrosion resistance.



Precision

gaSteam is suitable for precision applications, thanks to continuous capacity modulation from 25% (12.5% for UG180 and UG300) to 100% (giving a precision of $\pm 3\%$ around the set point).



Easy installation

Unit set-up is made easier by a simple and intuitive user interface, which guides users through the settings of the basic humidifier configuration parameters.

Unique features of gaSteam

The upgraded range introduces substantial innovations, covering both the hardware and the control and management functions.

Heat exchanger

The exclusive design of the heat exchanger ensures high efficiency (94-96%) and easy maintenance. Made from stainless steel to ensure a long life with any feedwater.



±3%

Accuracy around the relative humidity set point

Easy maintenance

gaSteam can be used with mains water, which leads to scale build-up over time. The boiler has however been designed to allow scale to accumulate at the bottom, without affecting the heat exchanger and reducing routine maintenance for descaling. When necessary, the bottom of the boiler can be easily opened for complete cleaning. The use of demineralised water reduces routine maintenance and prevents the unit from having to stop for periodical cleaning.

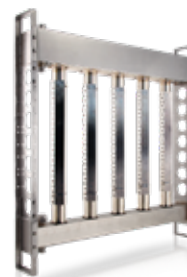
Indoor and Outdoor version

In addition to the traditional Indoor version, there is also an Outdoor version (ETL certified) for outside installation (-20 to 45°C / -4 to 112°F). The latter version eliminates the risk of having a source of gas inside the building, and can also be used when no space is available indoors. The base is raised to avoid the stagnation of water and simplify handling by forklift.



Steam distribution

gaSteam can be used for humidification in ducts, together with stainless steel steam distributors, or directly in rooms, combined with CAREL steam blowers. In the most critical applications, for maximum performance, the ideal partner for gaSteam is ultimateSAM, a high-efficiency ducted steam distributor: this guarantees complete absorption of the steam in just a few inches, while also minimizing condensation.



ultimateSAM



Blower

Safety and flame control

The control system, connected to the electrical panel, detects the flame, so as to ensure maximum reliability and safety. In addition, when necessary it manages automatic flame reignition or closes the safety valve, sending an alarm signal.



Unprecedented user experience and connectivity

gaSteam has been completely redesigned from all points of view, with hardware and software features that are unique on the market

Manage the site simply and effectively: keep system status under control and optimize maintenance scheduling



Touch screen display

pGDX is the new touch screen display that sets a new standard in user experience.

Easy navigation and immediate availability of information make it efficient and pleasant to use.

Designed to simplify humidifier management even for less-experienced users, while at the same time giving the gaSteam range a touch of elegance and unprecedented technology.

c.pHC controller

The gaSteam electronic controller, called c.pHC, has been designed and developed by CAREL for simple commissioning and installation, so as to quickly obtain excellent performance. The two versions of gaSteam, despite being differentiated in terms of the preferred application, share some important basic features, such as:

✓ Commissioning wizard

Simple and fast guided step configuration of the main parameters when starting the unit the first time.

✓ Modulating limit probe

To avoid condensation in the ducting/AHU.

✓ Supervision

The default communication protocols on the units are **Modbus®**, **BACnet™** and CAREL on the BMS serial port, as well as Modbus® and BACnet™ on the Ethernet port.

✓ Preheating

This function keeps the water in the boiler at a temperature that can be set by the user for an immediate response when steam production is required.

✓ tERA ready

Enabling the service via the Ethernet connection allows remote monitoring and interaction with the unit.



Cloud based monitoring

Two years' access to the tDisplay remote monitoring service is an important option included for no extra charge with gaSteam. By enabling tDisplay through the Ethernet or UMTS connection, users can remotely monitor and interact with the unit, accessing data on unit operation at any time from the cloud.



Webserver

The built-in webserver allows a simple internet browser to configure and monitor the entire humidification system from a PC or tablet, connected to the local network.



Control features

Continuous modulation	25-100% (12.5-100% for 400 and 660 lbs/h units)
Built-in control (probes not included)	RH or temperature
Proportional to external signal	●
Limit probe supported	●
Remote ON/OFF	●
Alarm relay	●
Signal type (probe or external controller)	0 to 10 V; 0 to 1 V; 2 to 10 V; 0 to 20 mA; 4 to 20 mA
Supervisor (via RS485 and Ethernet)	●

- standard

Why use demineralized water?

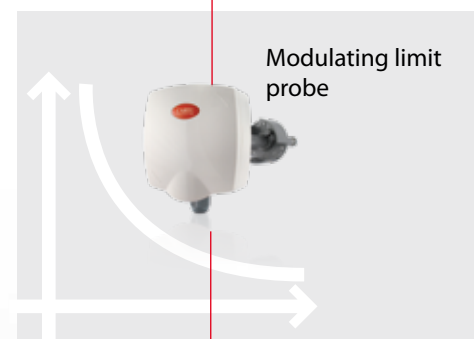
- minimized maintenance, as there is no scale build-up inside the humidifier;

gaSteam - main applications

gaSteam is perfectly suited to industrial and commercial applications with medium humidification loads.

Paint spray booths

Steam has a high absorption capacity in the air, making it the ideal solution where reduced space is available for humidification. gaSteam humidifies isothermally, exploiting the low cost of gas compared to electricity. If the spray booth already uses a gas burner, it has the advantage of being able to exploit the existing gas line.



Modulating limit probe



reduction
in condensation
-20%
compared to
standard
distributor



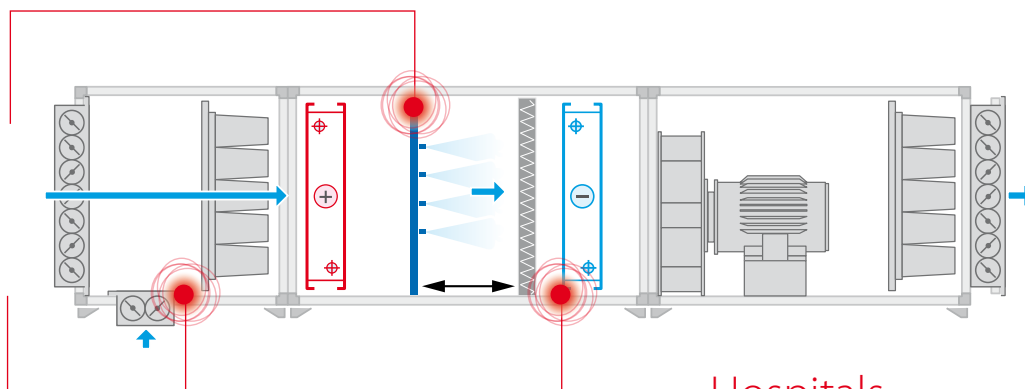
gaSteam indoor



ultimateSAM



Control probe



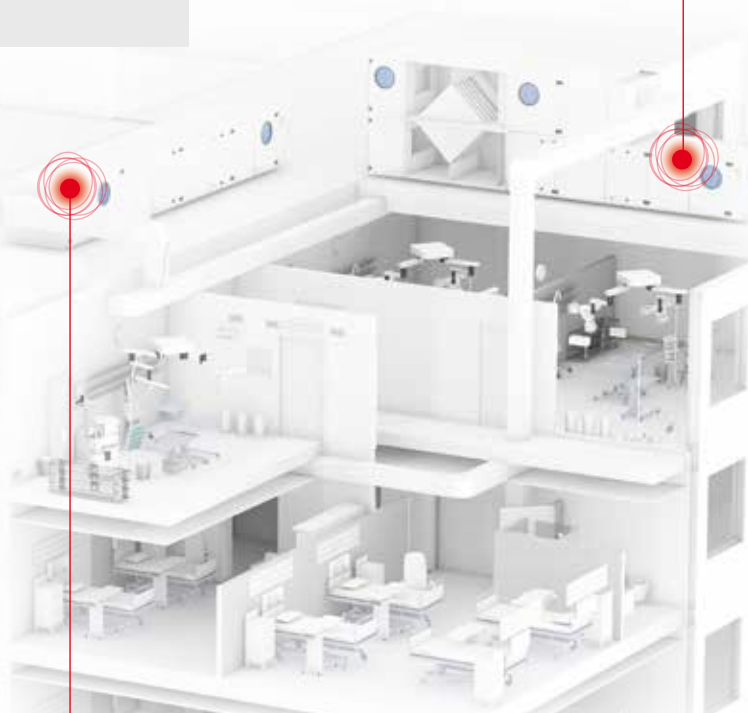
This probe is a safety device placed downstream of the droplet separator to avoid condensation inside the duct. The modulating action reduces steam production when approaching the limit, so as to guarantee service continuity and avoid downtime.

Hospitals

The many advanced functions of the c.phc controller, such as backup and rotation, allow gaSteam to ensure the highest service continuity, essential in a "mission critical" application such as a healthcare facility. Advanced connectivity to the local network (webserver) and the remote supervisor (cloud) allows maintenance personnel to receive remote alarm notifications, check unit status and take prompt action or even anticipate any problems, thus reducing unit downtime to the minimum.

ultimateSAM

This is CAREL's top-of-the-range CAREL distributor, built with an insulation system to reduce condensation by 30% compared to the standard distributor and guarantee high absorption efficiency even in extremely small spaces.



reduction
in condensation
-30%
compared to
standard
distributor



ultimateSAM



gaSteam outdoor

Table of gaSteam Indoor and Outdoor versions

Specifications	UG045*	UG090*	UG150*	UG180*	UG300*	UG450*
General						
Rated steam production (lbs/h)	90	200	330	400	660	990
Power supply	230 Vac 50 Hz (ver. UG***YD004)/ 115V 60 Hz (ver. UG***Y1104)					
Power consumption at rated voltage (W)	180	250	260	385	400	660
Steam outlet pressure limits (wc)	0 to 8.03					
Steam connection (Ø mm)	2x40	2x40	1x80	4x40	2x80	3x80
Gas connection	1x1"G	1x1"G	1x1"G	1x1" 1/4G	1x1" 1/4G	1x1" 1/4G
Operating conditions	Indoor: 33T104 °F; 10-90% rH. non cond. Outdoor: 33.8T113 °F; 10-90% rH non cond					
Storage conditions	-14T158°F, 5 to <95% RH non-cond.					
Ingress protection	indoor: IP20					
	outdoor: IAS 12-94					
Certification	CE, ETL (UL998), TÜV and AGA. In addition for the outdoor version: ETL in accordance with IAS standard (no. 12-94) for outdoor installations					
Water fill						
Connection	1x3/4"G male					2x3/4"G male
Temperature limits (°F)	34T104					
Water pressure limits (MPa - bars - psi)	0.1 to 0.8 - 1 to 8 - 14.5 to 116 psi					
Fill valve instant flow rate (gal/m)	4.76 US gal/min					
Water drain						
Connection (Ø mm)	50					
Temperature (°F)	<212					
Instant flow rate (gpm)	5.94					

(*) gaSteam can be supplied with completely demineralized water (0°FH). If supplied with softened water, observe the minimum hardness value and follow the instructions shown in the manual.

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