

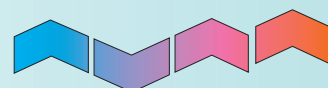
Vapac[®]



*Delivering Humidification
Advantage*

VAPASPRAY

Adiabatic Spray Humidifier





VapaSpray Open Space and In-Duct Atomising Systems dramatically reduce energy costs to meet exacting environmental requirements

Open Space Air/Water

Atomising Heads insert water droplets into the space at high discharge velocity not possible with water only systems.

The Open Space system is fully automatic, controlled by humidistats, discharging micro-sheared water droplets into the air - thus providing the Evaporative Cooling effect on the surrounding air and raising the Relative Humidity without creating excess moisture.

Features & Benefits

- Self-cleaning and self-sealing atomising heads.
Using treated water ensures the nozzles remain free and clear, minimising maintenance.
- Significant reduction in energy costs compared to direct energy humidifiers.
The Adiabatic process delivers Cooling as well as Humidification.
- No dripping or spitting.
Air/Water Atomisation system discharges micro-sheared water droplets of high velocity.
- Each Open Space Atomising System comes complete with Atomising Head assemblies, control section and humidistat controls.
VapaSpray can also offer Water Treatment and Air Compressor packages to suit the local conditions.
- Fully modulating with a 30:1 turndown ratio.
Each system type is available with On/Off or proportional control.
- Uniform moisture distribution throughout the duct or air handler.
Water vapour is introduced into the space uniformly to ensure full coverage of the Humidified space.
- Patented stainless steel or brass Atomising Heads.
VapaSpray will select the appropriate material to meet the project criteria with due commercial consideration.
- Each Open Space system includes a Humidification control centre. VapaSpray minimises field fitting and wiring with tried and tested technology.



In-Duct Air/Water

Atomising manifold is factory assembled for ease of installation.

The Adiabatic Cooling and Humidifying Technology is ideal for industrial and commercial buildings.

VapaSpray is energy efficient, easy to install and cost-effective.

Features & Benefits

- Self-cleaning and self-sealing atomising heads.
Using treated water ensures the nozzles remain free and clear, minimising maintenance.
- Significant reduction in energy costs compared to direct energy humidifiers.
The Adiabatic process delivers Cooling as well as Humidification.
- No dripping or spitting.
Air/Water Atomisation system discharges micro-sheared water droplets of high velocity.
- Each In-Duct manifold is factory fabricated, pre-wired, calibrated and tested.
Is easy to select, install and commission.
- Fully modulating with a 30:1 turndown ratio.
Each system type is available with On/Off or Proportional control.
- Uniform moisture distribution throughout the duct or air handler.
Water vapour is introduced across the full cross sectional area of the air path.
- Patented stainless steel or brass Atomising Heads.
VapaSpray will select the appropriate material to meet the project criteria with due commercial consideration.





VAPASPRAY SYSTEM SPECIFICATION

Open Space Atomising System

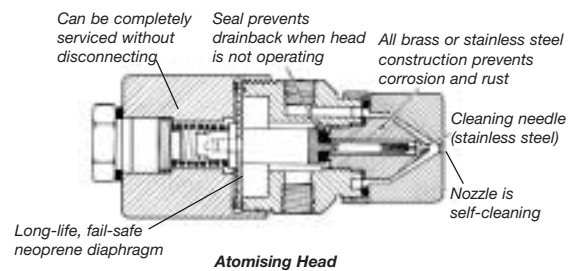
Control Sections	Compressed Air Modulating Water
Air-Pressure Required	(4.14 bar) 60psi min. to the Control Section (2.07 bar) 30 psi min. to the Atomising Heads
Water Pressure Required	(3.45 bar) 50 psi min. to the Control Section (2.48 bar) 36psi min. to the Atomising Heads
Water Control Section	Gate Valve Pressure Regulators with Strainer, Pressure Gauges, 3-Way Solenoid Valve
Air Control Section	Gate Valve, Pressure Gauge, 2-way Solenoid, Pressure Regulators with Gauge & Strainer, Air Pressure Switch
Piping (Water)	Potable Water: Type 'L' Copper & Brass De-ionised Water: 304/316 Stainless Steel
Piping (Air)	Type 'L' Copper & Brass
Humidistat	Control & Safety, 0–70% RH +/-2%
Phase	Single
Voltage	24/120 230 VAC (120 VAC Standard) 120/230 VAC 50/60 Hz
Atomising Heads	Internal Mix Method, Atomising (2.7, 3.6, 4.5, 5.5, 6.8, 9 kg) 6, 8, 10, 12, 15, 20 lbs of water/hr Head Capacity Self-cleaning Type, All Stainless Steel or Brass
Air Requirement	(5.7 l/sec per 45 kg/hr) 12 SCFM per 100 lbs/hr Water Atomised
Water Droplet Size	<10 Microns at 100% Output, Avg
Warranty	One Year from Start Up Date



Typical Control Section

In-Duct Air/Water Atomising System

Control Sections	Compressed Air Modulating Water
Air-Pressure Required	(4.14 bar) 60psi min. to the Control Section (2.07 bar) 30 psi min. to the Atomising Heads
Water Pressure Required	(3.45 bar) 50 psi min. to the Control Section (2.48 bar) 36psi min. to the Atomising Heads
Water Control Section	Ball Valve Pressure Regulator with Strainer, Water Modulating Valve (if used), Solenoid Valve
Air Control Section	Ball Valve, Pressure Gauge, Pressure Regulator with Strainer, Air Pressure Switch
Piping (Water)	Potable Water: Type 'L' Copper & Brass De-ionised Water: 304/316 Stainless Steel
Piping (Air)	Type 'L' Copper & Brass
Humidistat	Control & Safety, 10–90% RH +/-5% Electronic, 0–100% RH +/-3%
Phase	Single
Voltage	24/120 230 VAC (120 VAC Standard) 120/230 VAC 50/60 Hz
Atomising Heads	Internal Mix Method, Atomising (2.7, 3.6, 4.5, 5.5, 6.8, 9 kg) 6, 8, 10, 12, 15, 20 lbs of water/hr Head Capacity Self-cleaning Type, All Stainless Steel or Brass
Air Requirement	(5.7 l/sec per 45 kg/hr) 12 SCFM per 100 lbs/hr Water Atomised
Water Droplet Size	<10 Microns at 100% Output, Avg
Warranty	One Year from Start Up Date



Typical Water Control Section



Typical Air Control Section



SPECIFICATIONS FOR A VAPASPRAY IN-DUCT ADIABATIC SYSTEM

PART 1 GENERAL

1. Furnish and install as indicated on the drawings an in-duct atomising humidification and evaporative cooling system complete with: Humidification Control Centre with In-Duct Atomising Head Manifold.
2. Warranty system for a period of one year from date of commissioning.
3. Maintenance agreement to run concurrent with the first year warranty and consecutively, annually, for the life expectancy of the system.
4. Provide owners manual to cover installation, start-up, operating and maintenance instructions.
5. Refer to schedule on drawings for capacities.

PART 2 PRODUCT

A. Control Section

1. Factory fabricated and tested.
2. All internal components pre-wired and prepared to terminals, ready for field connections.
3. ON/OFF switch with 'POWER ON' and 'SYSTEM ON' lamps.
4. Stand alone systems provide supply and return air humidity readings.
5. Relay for each stage of control.
6. Controls shall incorporate a clean-out cycle timer to keep the heads clean and in working order.
7. Optional – The system shall incorporate an automatic blow-down technique to empty the water lines of all liquid on shut down to prevent freezing.
8. Each humidification system shall consist of two Control Sections; one for compressed air supply, the other for modulating water supply.
- 8 a. The Water Section shall consist of pressure regulator, pressure gauges, water modulating valve (if used) and solenoid valves. Water pressure to the control section shall be 3.5 Bar and water pressure to the duct manifold shall be maintained at 2.8 Bar minimum.
- 8 b. The Air Section shall consist of pressure gauge, 2-way solenoid valve, regulator with gauge and strainer, and an air pressure switch. Compressed air pressure to the control section shall be 4.2 Bar and air pressure to the duct manifold shall be maintained at 2 Bar.
9. All air and water piping shall be type 'L' copper, PVC or stainless steel.
10. Electrical requirements are 120 volt, single phase. Maximum amp draw will be 5 amps.

B. Atomising Head Manifold

1. Manifold shall be a factory assembled unit consisting of air and water piping and Atomising Heads.
2. Atomising Head capacity shall be 2.7, 3.6, 4.5, 5.4, 6.8, 9 kg of water per hour. Larger capacity heads will not be accepted. Heads will be positioned to provide the maximum possible distribution. External mix nozzles are not acceptable.
3. Atomising Heads shall be machined solid brass or stainless steel construction, easily dis-assembled for servicing with self-cleaning and purging feature to provide completely drip free operation. Maximum water droplet size produced by the heads will not exceed 10 microns at 100% output and vary down to sub-micron with modulation of the system.
4. Single manifold systems to have full modulation with 30:1 turn down ratio. Dual manifold systems to have full modulation on each manifold, staged with 60:1 turn down ratio.
5. Manifold length should be as indicated on the drawings or sized by the manufacturer to meet the calculated load.
6. Air consumption shall be a maximum of 5.71 l/sec free air per 45kg of water atomised per hour. Compressor size shall include an additional 20% safety factor.

C. Operating Sequence

AH-1200 Series (Stand-alone Proportional + Integral)

1. When the relative humidity drops below the pre-determined set-point, the return air plenum humidistat will send a signal to the controller in the Vapac Control Section.
2. If a high limit duct sensor is used, a signal is transmitted to the controller with a decreasing signal as the relative humidity in the discharge plenum approaches 85% RH.
3. The controller will compare the two input signals with the humidity set point and supply the appropriate signal to the modulating water valve.
4. If the system employs a dual-manifold output system, the control logic will provide modulating signals to both water valves.

AH-1200 Series (Dependent Proportional)

1. When the relative humidity drops below the pre-determined set-point, the return air plenum humidistat will send a signal to the controller in the Building Management System (DDC).

2. If a high limit duct sensor is used, a signal is transmitted to the controller with a decreasing signal as the relative humidity in the discharge plenum approaches 85% RH.
3. The DDC controller will compare the two input signals with the humidity set point and supply the appropriate signal to the Vapac Control Section. The Control Section will transmit this signal to the modulating water valve.
4. If the system employs a dual-manifold output system, the control logic will provide modulating signals to both water valves.
If a duct air flow sensor is used in the application, it will shut down the system automatically if there is no movement of air in the plenum.

D. Optional Mist Eliminators

1. Furnish to the installing contractor mist eliminators capable of removing water droplets over 1 micron in diameter and consisting of:
 - a) 25mm thick stainless steel support frame(s) sized to match the overall size of the duct or plenum. Any sealing required to seal the edges will be the responsibility of installing contractor.
 - b) 25mm thick non-woven animal hair and natural fibre pad will be used which has a pressure drop when clean of 21Pa at 107m/min (1.78 m/sec).
 - c) If a drain pan is required, the installing contractor to provide a drain pan under the eliminator system which shall extend at least 625mm ahead of and behind the eliminator pads. The eliminator frames should be installed in relation to the drain pan to prevent 'blow by'.
 - d) Eliminator media used shall be non-hazardous.
2. Bent plate, chevron type eliminators are NOT acceptable as they will not remove droplets less than 25 micron in size without appreciable pressure drop.

PART 3 EXECUTION

A. General

1. Install system(s) as detailed on the drawings and/or as recommended by the manufacturer. Shop drawings, indicated manifold sizes, and Atomising Head capacities shall be provided by the manufacturer. Manufacturer's representative shall provide analysis, design and start-up support of the custom engineered humidification system(s).
2. Attached to the compressor shall be an air or water cooled after cooler, a moisture separator, a trap and a coalescing filter capable of cleaning the air to .5 micron.

PART 4 WATER QUALITY CONSIDERATIONS

1. The VapaSpray Atomising Head was developed over 35 years ago and, because of its self-cleaning capability, has operated on hard water with only annual maintenance required. However, when atomised water droplets evaporate, they leave behind mineral residue in the form of a fine dust, usually measuring .3 to .7 microns in particle size. In an environment such as a printing plant, this dust is not a concern because the printing operation will put more contaminants into the air than atomisation. In a computer room, mineral dust could be disastrous.
2. Historically, water quality under 50 PPM Total Dissolved Solids (TDS), has been used successfully in general office applications. However, the increased sensitivity to IAQ will further restrict the applications where raw water can be used. The minerals can be removed from the water or from the air stream downstream of the humidifier. ALWAYS send a water analysis or water sample to Vapac prior to finalising the design. Many sites have demineralised water available for use in the humidification equipment. If this is the case, simply confirm the water supply has been de-mineralised and is being supplied by others. Your application may contain sensitive equipment that dictates what water treatment path is followed. Planning in the design stages is far easier than reworking after the fact!
- 2 a. If, according to the results of your consultation with Vapac, the water is deemed unusable in raw form, the water can be demineralised through a variety of techniques including nanofiltration, reverse osmosis de-ionisation or a combination thereof. Depending on your application, Vapac can suggest the most cost effective method to solve your water problem situation. The proper selection of water treatment for a VapaSpray system is a very important step in the design process, and should not be discounted.
3. Removal of minerals after evaporation is accomplished through the use of air filters. If the TDS count is low this may be a suitable alternative. Again, always contact a Vapac representative prior to finalising the system design.
4. Vapac can perform a complete water analysis and provide you with important recommendations for the handling of any humidification project. We strive to provide a complete design concept for any humidification project which can include: selection of equipment, energy analysis, water treatment recommendations, air compressor sizing and selection, and how to control all facets of the system.

Vapac® is an internationally registered trademark
Vapac equipment is covered by international patents



The manufacturers reserve the right to change the design or specification of the equipment described in this brochure without prior notice.

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