

Atomizing Nozzle Humidifiers



AF
SERIES

 **nortec**
humidity.com



The importance of providing and maintaining correct interior humidity levels in the workplace is universally acknowledged.

Too much humidity can be as counter-productive as too little. Industrial humidifiers must be able to provide reliable, low maintenance, humidity control that matches the specific application.

Nortec offers considerable expertise in humidification and the company has grown to be a world leader in the industry. For over 20 years Nortec has been offering the AF Series atomizing nozzle systems to suit a broad range of applications both large and small.

Nortec AF Series atomizing nozzle systems combine durable, high-quality construction with ease of installation and reliable operation to provide a long lasting, high performance humidification system. The AF Series family consists of the AFE Nozzle Systems and the HP HVAC high pressure humidification system.

AFE nozzles use water and compressed air to create a fine mist. They are primarily designed for in-space applications, and are available as pre-packaged systems (MINI and OCTO) or as modular engineered systems which meet the requirements of a specific project (AFE Systems).

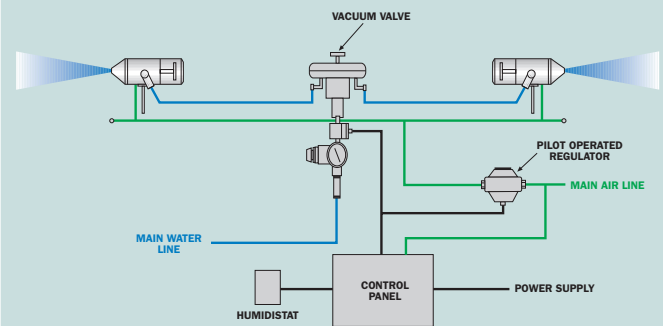
HP HVAC uses a specially designed impeller type nozzle that relies on pressure to atomize the water. HP HVAC is intended for ducted applications and systems are engineered to meet the exact requirements of each individual project. Contact your Nortec representative today for more information.

poultry
cold storage
printing plants
painting processes
furniture manufacturing
textile plants
woodworking
electronics manufacturing
high tech
green building

Nortec AF Series systems use advanced nozzle technology to inject droplets of water directly into the air. This method of humidification has the following advantages over steam humidification:

- ▶ Lower frequency of maintenance
- ▶ Systems are scalable to meet almost any load requirement
- ▶ A “no cost” air cooling benefit due to evaporation extracting heat from the air (adiabatic cooling)
- ▶ Maintenance is primarily focused on keeping the air compressor operational
- ▶ Change of components is fast and requires minimal system disassembly
- ▶ Energy efficient
- ▶ Stainless Steel construction

Typical layout of an AFE System



Compressed Air & Water Nozzle Humidifier (AFE)

Nortec AFE systems are available either as a packaged system or as a modular engineered system. Both require connection to electrical power, water and compressed air.

AFE systems are ideal for direct space fogging applications such as manufacturing, automotive, printing, woodworking, textiles, paint booths, concrete curing, warehousing, and storage systems. They offer the benefits of low operating costs, minimal maintenance, and accurate control.

High-Pressure Nozzle Humidifiers (HP HVAC)

Using advanced atomization nozzles to ensure efficient evaporation, the Nortec HP HVAC humidification system provides considerable operating cost savings when compared to other technologies.

Patented impeller type high pressure nozzles generate an extremely fine spray of water droplets. A unique nozzle manifold design ensures that the spray is uniform, and absorbed over a short distance. In combination with the Nortec Mist Eliminator, the humidified air is 99% free of aerosols for hygienic operation.

AFE

Atomizing Nozzle Systems for Space Applications



AFE Nozzle



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HP HVAC Series

High Pressure Nozzle System for air-handling units or duct applications



Nozzle

AFE nozzles use compressed air to create a vacuum over the water orifice and draw the water into the airflow as it exits the nozzle. This action mixes the air and water into a fine mist which can be adjusted by regulating the velocity of the air. A spring operated plunger activates a cleaning needle which cleans the water orifice and seals the water inside the nozzle to prevent dripping whenever the humidifier cycles off.

- ▶ Vacuum system automatically stops water flow if air pressure drops.
- ▶ Nozzle design ensures equal output across all nozzles.
- ▶ Programmable timer for self-cleaning.
- ▶ Can be mounted on walls, columns or suspended from ceilings.
- ▶ Water particle size of 3 to 10 microns.
- ▶ High quality 316 stainless steel components.
- ▶ 15 lbs/hr (6.8 kg/hr) from a single nozzle.

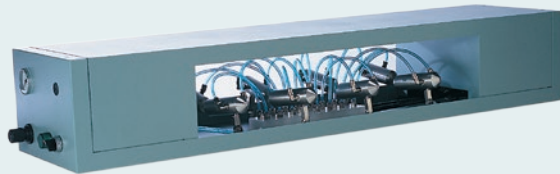
The patented impeller type **NOZZLE** delivers 10-40 micron droplets through a 0.008" orifice. The nozzle operates on high pressure water (1000 psig) and does not require compressed air. The housing and impeller are constructed of 316 stainless steel for a long trouble-free life.

The **PUMP MODULE** supplies high-pressure water to the nozzles eliminating the need for a compressed air system. HP HVAC pumps operate on reverse osmosis or deionized water to ensure hygienic operation in ducted system. Pump modules use advanced water-lubricated stainless steel pumps and are available with or without a variable frequency drive.

Octo

Packaged Ceiling Mount System

The **OCTO** is a high output, packaged humidifier designed for large capacity projects. It consists of a powder coated metal housing with four, six, or eight AFE nozzles, and is designed for ceiling suspended installation. Capacities of up to 120 lbs/hr (54 kg/hr) are available. Multiple OCTO's can be controlled by a single AF Series control panel when a large area needs humidity.



Mini

Packaged Wall Mount System

The **MINI** is a compact self-contained unit ready for wall mounting in a specific area or room. It includes an attractive housing with one or two AFE nozzles, vacuum and control valve, cleaning cycle relay and switch. Each nozzle has a humidification delivery capacity of up to 14 lbs/hr (6.4 kg/hr).



The unique **STAGE VALVE ASSEMBLY** allows you to obtain up to six stages of output through the nozzles. The valve **CONTROLLER** receives a control signal from the building management system will activate combinations of valves to modulate the humidity output.

The **MIST ELIMINATOR** protects downstream equipment from water droplets. The media is effective at capturing 99% of droplets and aerosols, has a UL 900 rating, and is compatible with UV light duct sterilization systems.



Stage Valve Assembly



Controller



Mist Eliminator



Pump Module

options

Nortec offers control solutions for every humidification application. Options include on/off humidistats for general control applications, modulating humidistats for precise control and remote control of relative humidity through a building management system.

Contact your local Nortec representative for details.

ON/OFF Controls

Nortec on/off controls can be used with all technologies for humidity control and/or humidification safety.

For room humidity control, Nortec offers a return-air duct mounted on/off digital duct humidistat or a wall mounted on/off digital humidistat. Both humidistats come complete with a built-in sensor, a keypad for adjusting setpoint and a backlit LCD display. Features such as outdoor temperature setback and a relay for furnace/circulation fan control ensure safe, energy efficient operation. Accuracies of $\pm 5\%$ RH are expected.

For humidification safety, Nortec offers an air-proving and high-limit control. The air-proving switch is used to prevent humidifying when there is no air movement in the duct. For high-limit control, an on/off digital duct humidistat is used to avoid over humidification of the supply duct.



Digital wall control

Modulating Controls

Nortec offers humidistats for room and duct control.

Humidistats provide a demand signal to the humidifier and typical accuracies of $\pm 3\%$ RH are expected with standard conditions. For specialty applications, tolerances of $\pm 1\%$ RH can be achieved. Contact the factory for more information.

Humidistats and transducers can either be wall mounted for room humidity control or duct mounted for room humidity and/or high limit control. Both wall and duct controls come complete with a keypad for configuration as well as a backlit digital display.



Digital duct control

SPECIFICATION	AFE	MINI	OCTO	HP HVAC
Water particle - micron	3-10	3-10	3-10	10-40
Output lbs/hr (kg/hr)	15 (6.4)*	28 (12.7)**	120 (54.5)***	12 (5.4)
Compressed air consumption/nozzle cfm (l/m)	1.8 (51)	1.8 (51)	1.8 (51)	N/A
Air pressure max psig (kPa)	90 (620)	90 (620)	90 (620)	N/A
Air pressure working min./max. psig (kPa)	0-70 (0-483)	0-70 (0-483)	0-70 (0-483)	N/A
Inlet Water pressure max. psig (kPa)	25 (172)	25 (172)	25 (172)	60 (414)
Nozzle construction	316 SS	316 SS	316 SS	316 SS
Power	120/24 Vac	120/24 Vac	120/24 Vac	120V to 575V
Adjustable cleaning timer	yes	yes	yes	N/A
Low pressure vacuum valve	yes	yes	yes	N/A
Automatic flush cycles	no	no	no	yes
Self-draining manifolds	no	no	no	yes
OPTIONS				
On/off humidistat	yes	yes	yes	yes
Modulation control	yes	no	yes	yes

* Capacity per nozzle ** w/ 2 nozzles *** w/ 8 nozzles



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