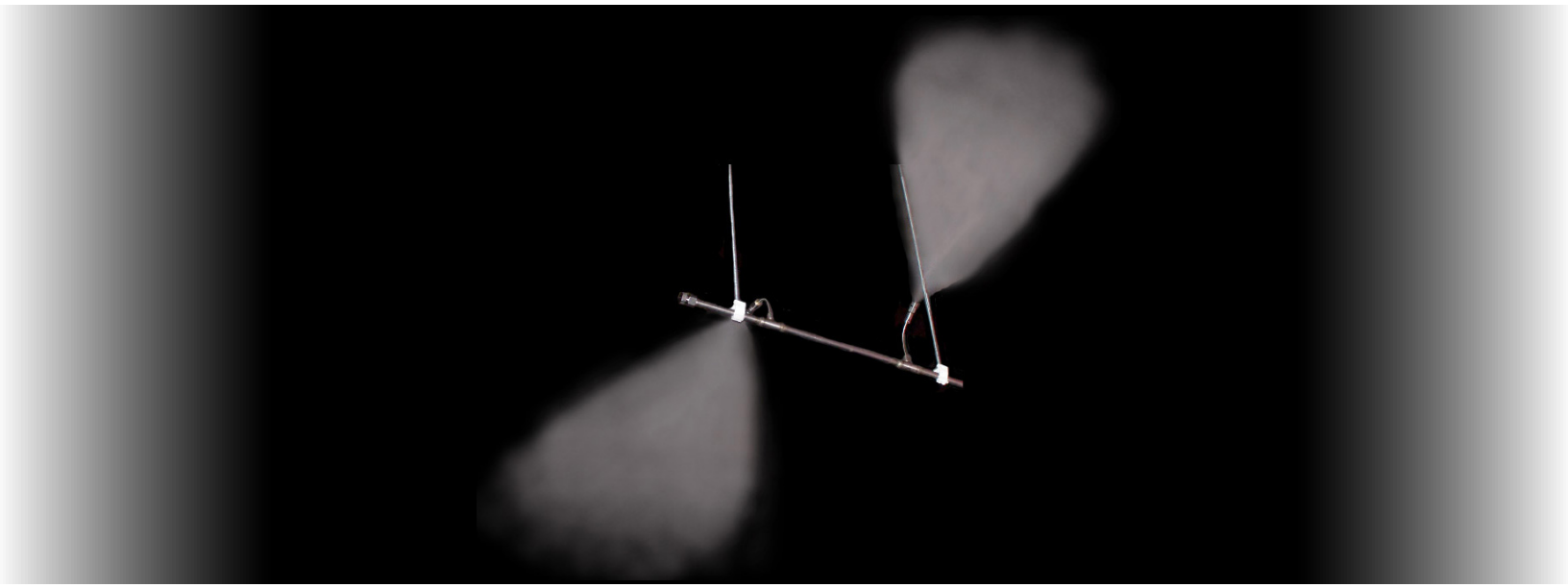


AirMist

All Stainless Steel Pipe with Individual Nozzles – High Pressure (1000 psi) Atomizing System

Automatically Maintains 24/7 Your Standard for Indoor Relative Humidity During Winter Manufacturing Operations

A Universal Design Standard for Relative Humidity Control in U.S. Industrial Manufacturing Operations

– 45% RH @ 72˚F –

WOODWORKING

PAPER/PRINT/LABEL

ELECTRONICS

TEXTILES

OTHER
- Greenhouses
- Paint / Finish
- Cold Storage
- Food / Baking
- Labs / Pharma
- Leather

- ***Preserving the Equilibrium Moisture Content (EMC) for Hygroscopic Sensitive Raw Materials and Work in Process.***
- ***Controlling Static Electricity (ESD).***
- ***Assisting in Dust Control.***

AirMist Operation

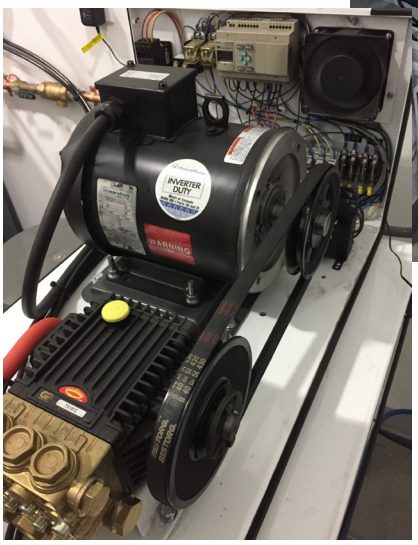
The system is completely automated and integrated sequentially by the operation of the PLC controlling the on/off timing of the pump.

The zone “Neptronic” humidistat/sensor controller reads the real time humidity and compares that to your humidity set point and sends a call for humidity to the PLC which cycles on the supply of high pressure water to all nozzles.

All high pressure lines are stainless steel pipe with stainless steel compression fittings. Pipe is suspended down from the ceiling using threaded rod and Clic Clamp anchoring fixtures.

Nozzle and pipe lines are located in the ceiling area generally down aisles which allow easy access and are spaced at intervals ranging from 18” up to 30” with nozzles adjustments pointing in alternating directions. We now feature using nozzle swivel adaptors now in place of nozzle wands to be able to easily adjust direction of nozzle moisture plumes. Swivel adaptors provide an economical and more easily adjustable solution to pointing direction of nozzle moisture plumes.

Moisture plumes are pointed out over obstacle free air spaces above equipment and work spaces for complete evaporation.





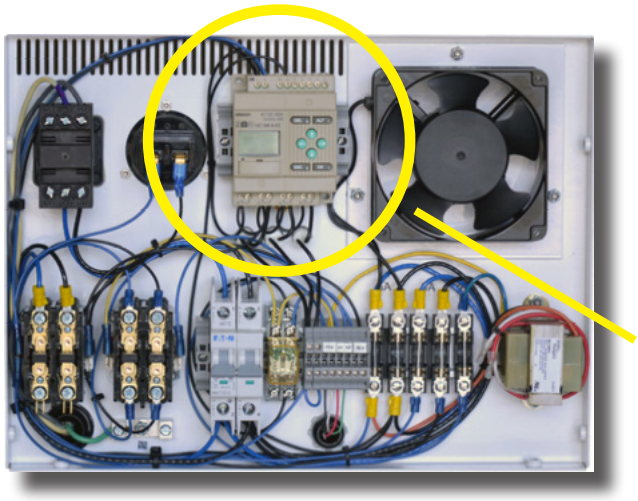

Pump Station

Features:

- **Pump Sizing:**
  a. Power Supply: Choice of single or three phase power.
  b. GPM’s: From .12 gpm up to 10 gpm.

- **High / Low Pressure Safety Switch (HPSS:** set at 600 psi to shut off pump protecting against sudden loss of water pressure.

- **Filters:**
  a. 5 micron filter for incoming water supply to pump.
  b. Each nozzle has 5 micron filter.



Internal Electrical:

- Electric Drain Valve (EDV) for single zone, 3/2 valves for multiple
- Integrated zone Neptronic Humidistat Controller.
- Hour meter tracks total operating hours for the pump.
- Indicator lights for pump operating status.
- **PLC** – Programmable Microprocessor: Accepts any incoming signal(s) as a means to operate the system – Provides ‘ON’ and ‘OFF’ sequencing for electrical components – Automatically disables the system with loss of water supply – Monitors and reports for when pump maintenance is required – Tracks hours of operation since the last maintenance. – Tracks the number of pressure loss faults – Indicator Lights are panel mounted for visual indication of the current status of the pump – a. Green (pump or individual zone ‘ON’) – Red (loss of sufficient water supply) – Amber (maintenance required).
- Exhaust Fan – Provides air movement and cooling within the enclosure.
- Contactors – Provides power to the pump motor upon receiving a start signal from the PLC.
- Circuit Breaker – Protects the pump from thermal overload conditions and the end user from a short circuit in the pump’s electrical system.
- Cube Relay – Provides the necessary bridge between the controller’s incoming signal and input to the PLC - used when the controller’s incoming signal and the required PLC voltage input are different.
- Terminal Blocks – Used to make the necessary connections between the pump and the external controller.
- Fuses – Included in the pump design to provide additional thermal and short circuit protection for individual components within each of the electrical circuits for the pump.
- Transformer – Provides 24VAC voltage for the Neptronic humidistat controller.

Neptronic Zone Humidistat / Sensor Controller

The Neptronic Zone Humidistat & Sensor (combined):

One Humidistat/Sensor is provided for each zone of system operation and is generally positioned at eye level where real time monitoring represents a realistic reading of the larger zone area.

The Sensor reads real time relative humidity levels and signals a “call for humidity” when the percentage of relative humidity decreases from “set point” which then energizes the on cycle of the pump station sending 1000 psi water flow to all nozzles in a zone.

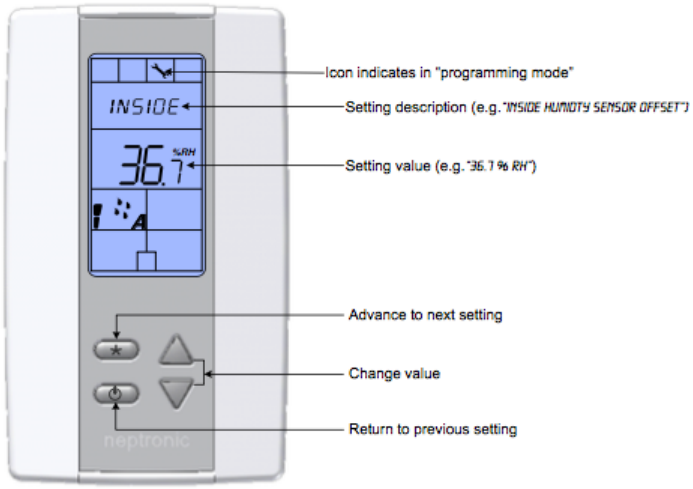
Upon reaching relative humidity “set point” the humidistat signals the cycling off of the pump station.

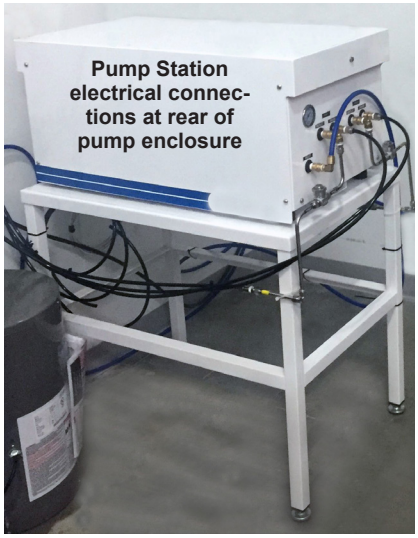
Humidistat connections are in at the designated terminal contacts at the back of the pump enclosure.

Locate the Humidistat where that location represents the reasonable reading for the entire zone area. Located at eye level with easy access for monitoring as needed.

Features

- Built in Sensor – precision ±3%
- Electronic LCD & Backlight
- External Humidity Sensor Input
- Set Point Range: 10-90%
  (in 1% increments)
- Lockable Set Point
- Real-Time Humidity displayed
- Dimensions:
  2.85” wide x 4.85” high x 1” deep
- Weight: 0.3 lbs
- Power supply: 22 - 26 Vac 50/60 Hz





Humidistat Wiring allows for 24VAC signal out to humidistat with 24VAC signal back to pump PLC. Humidistat (wall mount / one per zone) requires 24 Vac supply included at pump station. Wiring: 18 AWG – 3 conductor cable (two conductors for the power supply to the controller and the third for the return 24vac signal to pump PLC) – Wiring:

a. From Pump terminal contact to #1 terminal on humidistat, connect common.
b. From Pump terminal contact to #2 terminal on humidistat, 24vac input.
c. From Pump terminal contact to #8 terminal on humidistat, 24vac output (return hot leg sends signal to humidify which initiates pump and fans for startup.

Stainless Steel Pipe and Fittings

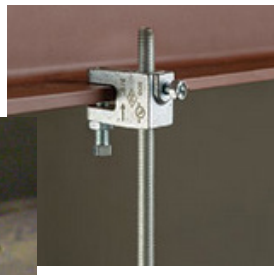
The combination of 1/2” and 3/8 stainless steel pipe and compression fittings, completes the delivery system providing for the supply of high pressure (1000 psi) water from the pump to all nozzles in the system.

3/8” and 1/2” tubing is 300 series stainless steel and shipped in 10’ or 20’ lengths. Nozzle spacing is according to the project requirements with standard options 18”, 24” or 30” center located with custom spacing lengths available. Stainless steel pipe is rated at 3000 psi with high consistency robotic orbital welds.

Stainless steel 3/8” and 1/2” compression fittings are the standard pipe connections and generally include unions, end caps, connectors, 3 way tees and sometimes compression to Slip-Lok depending upon nylon flexible tube used within the stainless steel design. All compression fittings are high pressure rated double ferruled fittings with an operating pressure rating of 3000 psi.

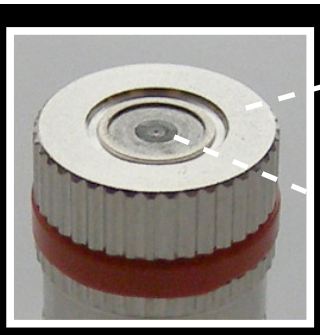
All stainless steel pipe is located in the ceiling over aisleways which are almost always the locations utilized which allow for easy install and continuing access. Pipe is hung from ceiling fixtures such as trusses using Clic Clamp fittings such as a pipe flange to secure the pipe with 1/4” threaded rod cut to length, and the Clic Clamp fixing the pipe and hangers to the plant structure.

Each nozzle port has a 10/24 NPT female orifice to receive a nozzle swivel adaptor with male and female ends in order to attach continuing swivel adaptors or the final nozzle. Each swivel adaptor attains a 30˚ angel in any direction. Using two attains 60˚ and three for up to 90˚. This approach allows the nozzle to be pointed in any direction from the vertical location of nozzle port to any angle within 90˚ to completely horizontal. Swivel adaptors and now the recommended option to use instead of former 6” stainless steel wands simply because they are more economical with more flexibility for use in pointing directions of nozzle moisture plumes.



Each high pressure line originates from the stainless steel line exiting the pump station. Each project varies depending upon using stainless steel output lines as shown, or using flexible nylon tube plumbed directly from the pump output using either 3/8” tube or 1/2” tube to accomodate specific pump design requirements.

Note: All lines should be purged (cleaned) before system startup (prevents installation from fines or debris during installation from fouling the atomization in nozzle orifices.



NOZZLE CAP

Synthetic Mineral Orifice Insert w/ Viton O-ring

SPRING ASSEMBLY

Impeller insert in 350 psi spring with Viton seat

ANTI-DRIP BODY

Bottom Housing with Viton O-Ring

Thread (male)
Standard - 10/24
Optional - 12/24

Part # IHC-03 White
0.1 mm / .004” orifice
.006 gpm / 3 lbs/hr

Part # IHC-05 Red
0.15 mm / .006” orifice
.01 gpm / 5 lbs/hr

Part # IHC-08 Blue
0.2 mm / .008” orifice
.016 gpm / 8 lbs/hr

3/8”W x 3/4”H x 10/24 thread

High Pressure Stainless Steel Nozzles With “Ruby Orifice” Inserts

The Ruby Orifice Insert Nozzle atomizes water to an ultra fine – micron sized water particle for quick and complete evaporation above your workspace.

Nozzle Construction

• **Stainless Steel:** for corrosion resistant long term performance using Viton O-rings & seat allows all parts to be **finger tightened only** with uniform 20% compression for high wear resistance – preventing leaking.

• **Ruby Orifice Inserts’s** inner surface is laser bored so smooth that nothing can stick to the surface. Compared with the micro-scopic surface of an all metal inner orifice surface reveals fine etchings or scratch marks made by the drilling which provide nucleation (attaching) points where dissolved minerals turn to crystal formations thereby interfering with normal atomization.

• **350 PSI Spring Assembly** controls the pressure “cracking” point which activates the nozzle to open and shut - the key to precision atomization at both start up and shut off. 350 psi is the critical pressure point to allow for a very clean initial burst of moisture with the finest micron sized particles for complete and quick evaporation.

• **The Anti-Drip Body Housing** composes the body of the nozzle and functions to interface between the water supply source and the nozzle cap. When all three parts of the nozzle are attached together, the nozzle is then threaded into the supply source as the Viton O-ring is the final seal which prevents moisture leaks even at very high pressure. All attachments and adjust-ments are finger tight only.

• **Five Micron filter** included with each nozzle located within the 10/24 thread end of the anti-drip body.

Typical Water Treatment Options

Control of Water Hardness Due to Calcium Carbonate ($CaCO_3$) Scale Build Up

• ScaleX2 (SX)

– Chemical-Free Scale Prevention. An alternative to water softening for the control of water hardness due to $CaCO_3$. Requires no salt, chemicals or electricity.
– Template induced crystallization (TIC) – Converts dissolved hardness ions into harmless, inactive microscopic crystals.
– An alternative to water softening – to be used on city water only.

• Water Softening (WS)

– Using a locally sourced water softening company.

– The design should be a twin alternating tank ion exchange system – *to eliminate water hardness / features should include auto backwash, regeneration, & rinse cycles*.

Control of Water Hardness AND Avoiding Air Dusting Due to TDS Content of Water

• DIBS (Delonized Blending System
– Used with locally sourced Delonizing (DI) Tanks.

– Blends raw water with DI water to produce a precise parts per million (ppm) range of total dissolved solids (e.g. Set at 50 ppm tds).

• Reverse Osmosis (RO)

– A Membrane Filtration System producing the ideal water purity – maintaining water quality in a range of 10-40 ppm tds.

– All RO Systems are designed and engineered for exact water treatment requirements.

Additional System Info – Installation – Warranty – Maintenance – Operation

Detailed Installation Instructions

• Provided with each project prior to equipment delivery and installation for all electrical and plumbing conections. Prior to install, customer is responsible for completing required plumbing & electrical services. All plumbing and electrical connection points must be within 6’ of equipment locations.

User Manual

• Provided for all system equipment.

Warranty for Workmanship and Materials

• Five years pump – Two years fan, humidistat/controller, tube, fittings and nozzles – IHC does not warranty components due to normal wear such as pump seals, belts and nozzle viton/o-rings, OR component misuse and/or abuse.

Standard Spares and Maintenance Kit (Per Project)

• Includes 1 ea 5 micron pre-filter and pre-filter wrench, 2 nozzles per fan, extra nozzle plugs, pump valve kit #123, pump seal kit #167, pump plunger kit #159, & 2 each 16 oz pump oil for 2 oil changes.

Routine Maintenance

• Pump (normal pump life 7-10 yrs with routine maintenance):
1. Change pump oil every 500 hours.
2. Change seals and valves as needed. Note: belt driven pumps spin at lower rpm’s dramatically improving maintenance intervals.

• Water Filters:
1. Change Pre-Pump 5 Micron Filters once per season (Oct 15 - Apr 15);
2. Clean / change post pump 100 micron filter yearly.

Spring Seasonal Shut Down

• Generally in mid April – shut down the system until September Startup. All pressurized water lines should be drained (see manual – detailed instruction).

Fall Seasonal Startup

• Flush water lines before season startup (generally in late September).

Year Round Operation

• If the system is left in operation all year, run system once every 2 weeks for ten minutes to maintain pressurized water lines free of stagnant water.

Recommended Water Treatment

• Use only recommended water treatment to insure optimum performance within your specific facility and production quality control requirements.

Supplier Contact Info

• Industrial Humidity Control LLC – Gaston IN – 765-702-4083 – *Industrial High Pressure (Water Atomizing Type) Humidity Control Systems.*
Ray Reiff Project Director – rreiff@industrialhumiditycontrol.com – 765-702-4083.