

FanMist Master Glossary of Technical Terms

A cumulative field reference, compiled document-by-document across the FanMist technical library.

This edition draws its terms from source documents including the FanMist Installation Handbook, the Parts & Equipment Price List, Load Calculator Guides, and the FanMist User Manual. Each entry carries a small gold source tag — [INS], [PL], [LCG], or [UM] — identifying which source document(s) it's drawn from. Terms are grouped by category rather than strict alphabetical order, matching how a field technician would actually look something up.

CATEGORY INDEX

01	Acronyms & Abbreviations	51 entries
02	System & Equipment Components	22 entries
03	Tubing, Fittings & Hardware	14 entries
04	Installation & Mounting Terms	10 entries
05	Electrical & Controls Terminology	10 entries
06	Operating Parameters & Specifications	6 entries
07	Water Treatment & Quality Terms	7 entries
08	Procedures & Maintenance Terms	9 entries
09	Physical & Scientific Principles	3 entries
10	Load Calculation & Psychrometric Terms	21 entries
11	Industry-Specific Process & Compliance Terms	12 entries
12	Compliance Standards & Referenced Codes	9 entries

ABBR.	MEANING
ACH	Air Changes (Exchanges) per Hour
ANSI	American National Standards Institute
ANSI/HI	American National Standards Institute / Hydraulic Institute (rotary pump standards)
APS	Automated Pump Station (equipment model prfix, e.g. APS200-4)
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
BAS/EMS	Building Automation System / Energy Management System
CFM	Cubic Feet per Minute — volumetric airflow rate
EDV	Electric Drain Valve
EMC	Equilibrium Moisture Content
ER	Evaporation Rate — CFM per lb of water output
ESD	Electrostatic Discharge
ExA	Exhaust-Air (CFM)
FNPT	Female NPT threaded connection
FSC	Final System Capacity (lbs/hr)
GD	Grains Difference (gr/ft ³)
GHT	Garden Hose Thread
GPM	Gallons per Minute — water flow rate
HP	Horsepower — motor rating
HPS	High-Pressure Safety (switch)
HRO20	Neptronic humidistat model designation
HVAC	Heating, Ventilation, and Air Conditioning
ID	Inside Diameter (tubing)

ABBR.	MEANING
ISO	International Organization for Standardization
LOTO	Lockout/Tagout
MAU	Makeup-Air Unit
MNPT	Male NPT threaded connection
MSD	Moisture-Sensitive Device
MuA	Makeup-Air (CFM)
NEC	National Electrical Code
NFPA	National Fire Protection Association (NFPA70 = the National Electric Code)
NPT	National Pipe Thread
OD	Outside Diameter (tubing)
OSHA	Occupational Safety and Health Administration
PLC	Programmable Logic Controller
PPE	Personal Protective Equipment
PSI	Pounds per Square Inch — water pressure
RH	Relative Humidity
RO	Reverse Osmosis — water treatment method
ROI	Return on Investment
RTO	Regenerative Thermal Oxidizer
RTU	Rooftop Unit
SS	Stainless Steel
TAB	Test-and-Balance (report)
TDS	Total Dissolved Solids — dissolved mineral content of water
TMC	Target Moisture Content (gr/ft ³)
UL	Underwriters Laboratories
UNC	Unified National Coarse (thread standard)
VAC	Volts, Alternating Current
VOC	Volatile Organic Compound

01

02

03

04

05

06

07

08

09

10

11

12

Pump Station [INS]

The enclosed equipment package housing the pump, PLC controller, and associated safety/control devices that generates and regulates 1000-psi water for the system.

PLC Controller [INS]

The programmable logic controller (Omron) inside the pump station that manages pump/fan sequencing, timers, and safety shutdowns.

Electric Drain Valve (EDV) [INS]

A Danfoss 2/2-way, normally-open solenoid valve on the pump discharge manifold that releases line pressure on shutdown to mechanically close the nozzles.

High-Pressure Safety Switch (HPS) [INS/PL]

Monitors system pressure and faults the pump off if it fails to reach 550 psi within the timed window, or if pressure suddenly drops during operation. Activates at 580 psi; rated 250V / 15A.

Unloader Valve [INS/PL]

Maintains consistent 1000-psi system pressure via an internal pressure regulator and bypass. Continuous high bypass (above ~75%) for prolonged periods builds heat in the returned water — the thermal relief valve protects the system if that heat isn't relieved.

Thermal Relief Valve [INS]

Opens automatically if water temperature inside the pump exceeds 145°F.

Low-Pressure Inlet Solenoid Valve [INS/PL]

Maintains proper water volume and pressure into the pump from the incoming supply; functions as an automated, normally-closed "smart faucet" for the pump's low-pressure inlet side.

24 VAC Transformer [INS]

Supplies low-voltage power for the humidistat and fan control circuits.

Fan Manual Override Toggle Switch [INS]

Allows independent testing of fan rotation from the pump station without a humidistat call.

Humidistat [INS]

Wall-mounted RH sensor/controller (Neptronic HRO20) that sends the start/stop signal driving the PLC's pump and fan cycling.

Mist-Ring [INS]

A stainless-steel ring carrying the nozzle ports, mounted to the face of each fan to distribute atomized water evenly into the airstream.

Nozzle [INS]

A stainless-steel, ruby-orifice atomizing tip threaded into a Mist-Ring port; mechanically opens and closes at a set cracking pressure.

Ball Valve Assembly [INS]

The fitting assembly connecting a fan's drop-down tube to its Mist-Ring, allowing that fan to be isolated for flushing or service.

Fan Contactor Relay Box [INS]

A remote junction box containing a contactor that switches plant power to a fan on the low-voltage signal from the pump station.

Bladder (Expansion) Tank [INS]

A pressurized reclaim tank that can capture the EDV's drain release back into the pump's low-pressure water supply instead of sending it to waste.

Diaphragm (Solenoid Valve) [PL]

The internal rubber component inside a water inlet solenoid valve that controls flow; if torn, out of position, or scaled, the valve will allow flow when off or restrict flow when on. Replacing the whole valve body is recommended over repairing the diaphragm alone.

01

02

03

04

05

06

07

08

09

10

11

12

High-Pressure Tube [INS]

Black nylon (Polyamide 12) tubing rated for 1000-psi operation, used in 1/2" and 3/8" sizes throughout the system.

Slip-Lok Fitting [INS]

A push-to-connect fitting system for high-pressure nylon tubing; tool-free to install and service.

Slip-Lok Coupling [INS]

A fitting that joins two lengths of same-diameter tubing to extend a run.

Slip-Lok 90° Elbow [INS]

A fitting that changes tubing direction 90°; used sparingly in favor of bending the tube itself.

Slip-Lok Three-Way Tee [INS]

A fitting that splits or combines flow, such as branching off to a drop-down line.

Transition Fitting [INS]

A Slip-Lok x NPT adapter that steps a run down from 1/2" to 3/8" tubing as it branches toward the fans.

Primary O-ring [INS]

The oversized internal O-ring inside a Slip-Lok fitting that compresses against the tube to form the leak-proof seal.

Backup Urethane O-ring [INS]

An optional secondary O-ring that buffers the ferrule teeth from the primary O-ring, extending fitting life.

Ferrule [INS]

The internal locking element inside a Slip-Lok collar that grips the tube once it is inserted and tugged back.

Drop-Down Tube [INS]

The 3/8" tube run connecting the ceiling-routed high-pressure line down to each fan's ball valve assembly.

Wall Clamp [INS]

A vinyl-coated steel clamp used to secure tubing to walls or structural supports.

Plumber's Tape [INS]

Thread-sealing tape applied to every threaded (NPT) connection in the system.

Compression Fitting [PL]

A stainless steel or brass fitting that connects rigid tube (typically stainless steel pipe) without welding or soldering; a nut and ferrule compress around the tube to create a leak-resistant seal.

Bulkhead Fitting [PL]

A fitting designed to pass through a panel or wall connection point (e.g. drain bypass on older pump stations), rather than joining two lengths of tube in-line.

01

02

03

04

05

06

07

08

09

10

11

12

Moisture Plume [INS]

The 4-ft-diameter by 22-ft-long column of atomized mist projected from a fan, sized for full evaporation in open airspace.

Fan Bracket [INS]

The mounting hardware that attaches a fan to structural steel, angle iron, or a wall.

Angle Iron [INS]

Structural steel used as a ceiling-truss mounting point for fan brackets.

Ceiling-Hung Mounting [INS]

Method of suspending a fan from ceiling truss angle iron rather than a wall or column.

Drip Loop [INS]

A deliberate downward loop in fan supply wiring that directs accumulated condensation away from the motor housing.

Local Disconnect Switch [INS]

A dedicated on/off switch installed at each fan for independent maintenance control.

Coil Memory [INS]

The tendency of coiled nylon tubing to retain its rolled shape; relaxed by uncoiling and warming before routing.

Deburr [INS]

Lightly filing or sanding a freshly cut tube end smooth before inserting it into a fitting.

180° Sweep [INS]

A flexible bend formed in the drop-down tube that allows a straight connection into the ball valve assembly.

Daisy-Chain Order [INS]

The fan-by-fan installation or flushing sequence, proceeding outward from the pump station.

01

02

03

04

05

06

07

08

09

10

11

12

Fan/Pump Delay [INS]

PLC-controlled sequencing: fans start 10 seconds before the pump; on shutdown, fans continue running 10 seconds after the pump stops.

Pressure-Build Timer [INS]

The PLC's timed window — 25 seconds in normal operation, 60 seconds on initial startup — for the pump to reach 550 psi before faulting off.

Strain Relief [INS]

A fitting at a pump-enclosure cable entry point that protects wiring from mechanical stress.

Normally Open (NO) [INS]

Valve configuration in which the EDV is open by default and is held closed only while energized.

Terminal Block (TB1) [INS]

The humidistat's internal wiring strip; only 3 of its 16 positions (Common, 24VAC, Humidify Output) are actually used.

Setpoint [INS]

The target RH% programmed into the humidistat that determines when the system cycles on and off.

Dead Band [INS]

The gap between the RH that starts the system and the RH that stops it; a wider setting reduces cycling frequency.

Proportional Band [INS]

The RH range over which the humidistat modulates its control response.

01

02

03

04

05

06

07

08

09

10

11

12

System Operating Pressure [INS]

The maximum rated pressure — 1000 psi — throughout the high-pressure water system.

Cracking Pressure [INS]

The 300-psi threshold at which a nozzle's internal spring mechanically opens to atomize water.

Burst Rating [INS]

The tubing's rated failure pressure (2500–2800 psi), providing a safety margin above the 1000-psi operating pressure.

Evaporation Rate (ER) [INS/PL]

CFM of fan airflow delivered per pound of water output per hour. Sources differ slightly on the ideal minimum — the Installation Handbook cites 80 CFM per 1 lb/hr or higher; the Price List and Load Calculator Guides cite greater than 75 CFM per 1 lb/hr. Example figures: 36" fan @ 10,000 CFM w/ 27" mist ring @ 111 lbs/hr = ER 90.54 CFM:1 lb; 24" fan @ 5,300 CFM w/ 18" mist ring @ 63 lbs/hr = ER 84 CFM:1 lb.

Operating Cycle [INS]

The pump/fan's typical 10-minutes-on, 10-minutes-off run pattern.

Average Seasonal Runtime [INS]

Typical annual operating hours — 1,500–2,000 — during the humidification season (Oct 15–Apr 15).

01

02

03

04

05

06

07

08

09

10

11

12

Pre-Filter [INS]

A 5-micron cartridge filter on the incoming water line that protects the pump and nozzles from particulate.

Scaling [INS]

Hard mineral deposit buildup inside the pump, lines, and nozzles caused by untreated hard water; prevented with a water softener.

Air Dusting [INS]

The dispersal of fine mineral particulates into the air when hard or untreated water is atomized; prevented with reverse osmosis treatment.

Water Softener [INS]

Equipment that reduces water hardness to prevent scaling.

Reverse Osmosis (RO) [INS]

A water treatment method that removes dissolved minerals to prevent air dusting.

01
02
03
04
05
06
07
08
09
10
11
12

Lockout/Tagout (LOTO) [INS]

OSHA 1910.147 procedure for isolating hazardous energy sources before servicing equipment.

Flushing Procedure [INS]

Mandatory pre-startup step that runs water through the system, nozzles removed, to clear installation debris before nozzles are installed.

System Startup [INS]

The sequenced procedure for bringing the system online and confirming correct pump, fan, and pressure operation.

Pre-Start Fan Testing [INS]

Verifying correct fan rotation using the manual override switch, both before and after final wiring.

Warranty Claim [INS]

The formal process for requesting repair or replacement of a defective component under the manufacturer's warranty terms.

01
02
03
04
05
06
07
08
09
10
11
12

Dalton's Law & The Ideal Gas Law (Gibbs-Dalton) [INS/LCG]

Water vapor exerts independent partial pressure within air and behaves nearly as an ideal gas — the physical basis for treating humidity as a quantity that equalizes throughout a shared airspace. Referenced in FanMist fan-plume placement guidance and in each Load Calculator Guide's "Three Physical Laws" section.

Fick's Laws of Diffusion [INS/LCG]

Water vapor migrates rapidly (approximately 25 ft/sec) from areas of high to low concentration along the vapor-pressure gradient until equilibrium is reached. Governs the rate at which moisture diffuses through air; referenced in fan-plume placement guidance.

Clausius-Clapeyron Equation [LCG]

Shows that saturation vapor pressure rises exponentially with temperature (approximately 7% per °C / 4% per °F) — meaning small temperature increases significantly expand the air's moisture-holding capacity. One of three physical laws (alongside Dalton's and Fick's) governing how humidity equalizes to a state of equilibrium throughout a plant's air space.

01

02

03

04

05

06

07

08

09

10

11

12

Governing Airflow [LCG]

The single most important input for a load calculation: the greater of total exhaust CFM or total makeup-air CFM (or an estimated ACH when CFM data isn't available). Whichever is larger drives the load calculation.

Air Balance [LCG]

The relationship between a building's exhaust-air CFM and makeup-air CFM; determines how much of the building's air exchange is deliberate (ventilation) versus incidental (infiltration).

Ventilation [LCG]

The deliberate, engineered exchange of air with the outdoors — process exhaust systems pulling air out, makeup-air units/economizers/supply fans bringing tempered air back in. Measured and usually preconditioned.

Infiltration [LCG]

The uncontrolled counterpart to ventilation: outdoor air leaking in through door gaps, dock doors, wall penetrations, and envelope imperfections, filling whatever gap a building's air balance leaves.

Negative Pressure (Building) [LCG]

Condition where exhaust CFM exceeds makeup-air CFM; the building pulls more air out than it replaces, drawing the shortfall in through infiltration. In this case exhaust CFM is the more representative governing figure.

Positive Pressure (Building) [LCG]

Condition where makeup-air CFM exceeds exhaust CFM; more air is pushed in than removed, suppressing infiltration (sometimes at the cost of excess conditioning capacity).

Balanced Pressure (Building) [LCG]

Condition where exhaust and makeup-air CFM are approximately equal; infiltration is minimal and measured makeup-air CFM is a trustworthy load input.

Grains/ft³ Difference [LCG]

The actual moisture deficit the system must supply: target indoor moisture content minus the moisture already available from heated incoming outdoor air (credited conservatively at 50% retention of its saturation value).

Load [LCG]

The total amount of moisture, in pounds of water vapor per hour, that the FanMist system must add to bring incoming air up to the target RH under design winter conditions. The central concept of the Load Calculator Guides.

Final System Capacity [LCG]

Load plus a 15% safety margin (baseline; higher-throughput or tighter-tolerance facilities may reasonably size larger), accounting for colder-than-design temperatures and minor operating variation.

Psychrometric Saturation Table [LCG]

Reference table (Table 2-A in each guide) showing grains of water vapor per cubic foot of air at 100% saturation for a given temperature; the basis for all load-calculation moisture lookups. Key conversion: 7,000 grains = 1 lb of water.

Target Moisture Content (TMC) [LCG]

The grains/ft³ value at target indoor RH% and temperature (saturation grains/ft³ × desired RH%).

01

02

03

04

05

06

07

08

09

10

11

12

Grains Difference (GD) [LCG]

Target indoor moisture content minus available outdoor moisture (at 50% retention); the figure used directly in the Load formula.

Formula #1 (CFM Basis) [LCG]

The preferred practical sizing method: Load (lbs/hr) = Grains/ft³ Difference × (Governing CFM × 60) ÷ 7,000 grains/lb. Used when exhaust/makeup-air CFM data is known.

Formula #2 (ACH Basis) [LCG]

Alternate practical sizing method used when CFM data isn't available: Load (lbs/hr) = Grains/ft³ Difference × (Total Volume ft³ × ACH) ÷ 7,000 grains/lb.

Practical Method [LCG]

The primary sizing approach used throughout each guide; accounts for 80–95% of load factors via Formula #1 or #2 plus a 15% safety margin, intentionally omitting small secondary factors.

Comprehensive Method [LCG]

Sizing method that builds on the Practical Method by adding secondary load factors (Product Regain, Process Vapors, People) for more precise calculations — used for high-throughput facilities or tight tolerance targets.

Product Regain [LCG]

Secondary load factor (moisture sink, increases load): dry incoming stock (lumber, paper rolls, PCBs/components) absorbs moisture from shop air as it reaches equilibrium, requiring additional humidifier output.

Process Vapors [LCG]

Secondary load factor (moisture gain, decreases load): water vapor released by certain operations (finishing/spray booths, glue curing, ink/coating drying, aqueous cleaning) partially offsets the humidification need.

Economizer [LCG]

HVAC component that modulates outdoor-air dampers seasonally; during winter it's set to a minimum outdoor-air position (typically 10–20%) that contributes to the governing makeup-air CFM figure.

Freeze-Protection Lockout [LCG]

A low-temperature lockout feature on many economizers that closes outdoor-air dampers further (sometimes fully) below a set outdoor temperature (often 0–10°F) to protect coils from freezing — can reduce actual winter makeup-air contribution below the nameplate calculation on the coldest design days.

01

02

03

04

05

06

07

08

09

10

11

12

Hygroscopic [LCGW/LCGP]

Describes a material (wood, paper) that naturally absorbs or releases moisture to reach equilibrium with the surrounding air.

Web Break [LCGP]

A paper/print industry defect where a moving paper web tears or breaks, often caused by static buildup or improper moisture content at low RH.

Static Electricity (Paper/Print) [LCGP]

Charge buildup in low-RH paper/print/label environments caused by web contact with rollers and guides; below roughly 30–35% RH, charge can't dissipate fast enough, causing web clinging, misfeeds, print misregistration, and dust attraction.

Electrostatic Discharge (ESD) [LCGE]

Damaging static discharge event affecting sensitive electronic components; RH control is one mitigation (raising surface conductivity to bleed off charge) but does not replace grounding, ionization, and ESD-safe handling practices.

Moisture-Sensitive Device (MSD) [LCGE]

An electronic component/package rated for moisture sensitivity with a defined "floor life" (allowable exposure time) once removed from moisture-barrier packaging.

Floor Life [LCGE]

The allowable time a Moisture-Sensitive Device can be exposed to ambient conditions before requiring baking or re-bagging, per J-STD-033 guidance.

Triboelectric Charge [LCGE]

Static charge generated by physical contact and separation (handling, movement across belts/trays, unwrapping ESD bags) — RH affects how fast this charge dissipates, not whether it's generated.

ISO Cleanroom Classification [LCGE]

Designation (ISO 14644) for a controlled cleanroom environment; cleanroom air-handling units run fixed, high air-change rates year-round independent of economizer/season, and process exhaust in cleanroom-adjacent areas cannot be recirculated without re-passing through HEPA/ULPA filtration.

ANSI/ESD S20.20 [LCGE]

The primary industry standard for a facility's overall ESD control program; RH is one input among several the standard's risk assessment covers.

Fully-Exhausted Process Stream

[LCGP/LCGE]

Process exhaust air (VOC-laden press/laminator exhaust; electronics reflow/solder/flux exhaust) that is sent entirely outdoors with no return-air loss factor applied — contributes 100% of its CFM to the governing exhaust total.

Recirculating Exhaust [LCGW/LCGP]

Process exhaust (dust collection, particulate-filtering systems) that returns filtered air indoors, typically with a 10–20% loss factor added back to the exhaust total.

Regenerative Thermal Oxidizer (RTO)

[LCGP/LCGE]

VOC-destruction equipment that solvent-based or flux-laden process exhaust is often routed through before release outdoors; its rated inlet CFM is a reliable proxy for fully-exhausted process air totals.

01

02

03

04

05

06

07

08

09

10

11

12

NEC / NFPA 70 [UM]

Electrical Safety & Wiring: governs the dedicated 20 A breaker, strain reliefs, licensed-contractor requirement, 24 VAC control wiring, and contactor/relay box installation.

OSHA 1910.147 [UM]

Lockout/Tagout: the federal standard governing hazardous-energy isolation and the lockout/tagout and depressurization procedure required before servicing the system.

OSHA 1910.132 [UM]

Personal Protective Equipment: the federal standard covering the PPE requirements referenced in the system's safety callouts and maximum-pressure warnings.

ASME B31.3 [UM]

Process Piping: the standard the system's 1000-psi rating, Slip-Lok fittings, EDV automatic depressurization, and high-pressure/thermal relief safety switches are consistent with.

ANSI/HI 1.6 [UM]

Rotary Pumps: the Hydraulic Institute standard, alongside manufacturer best practices, the pump maintenance schedule — oil change intervals, seal replacement, belt inspection, pre-filter requirements — is aligned with.

ASHRAE 188 [UM]

Legionellosis Risk Management: followed alongside CDC Legionella guidance in the system's RO/softener water-treatment recommendations, which prevent scaling and nozzle clogging.

ASHRAE 62.1 [UM]

Ventilation for Acceptable Indoor Air Quality: the standard, together with the ASHRAE Handbook — HVAC Applications, the system's evaporative humidification design (no wet spots, rapid evaporation via fan acceleration) is consistent with.

ANSI Z535 [UM]

Safety Labeling: the standard whose safety-label and signal-word conventions the manual's documentation and equipment labeling are built to meet.

UL 508A [UM]

Industrial Control Panels: the general construction expectations this standard sets for industrial control panels, referenced for the pump station's PLC enclosure.

01

02

03

04

05

06

07

08

09

10

11

12