



EVAPORATIVE COOLING AND HUMIDIFICATION

High-Pressure System (Europe)
Wetted Media System

- *Energy efficient*
- *Provides both direct and indirect evaporating cooling*
- *Multiple zone capabilities in air handlers, ducts, and open spaces*
- *Complete water treatment options available from DriSteem*

Advanced, efficient cooling and humidification



The DriSteem® High-Pressure System provides evaporative cooling and humidification in multiple zones and in a wide variety of applications. Humidify to enhance indoor air quality, manufacturing processes, material longevity, and comfort while taking advantage of the free cooling and energy savings inherent with this technology.

The DriSteem High-Pressure System handles every aspect of the application from the potable supply water source to the cooled/humidified conditions in the air handler, duct, or space.

ENERGY EFFICIENT

Heat already present in the air is used to evaporate the tiny, evenly-distributed water droplets dispersed by the system, saving on energy costs compared to steam humidification.

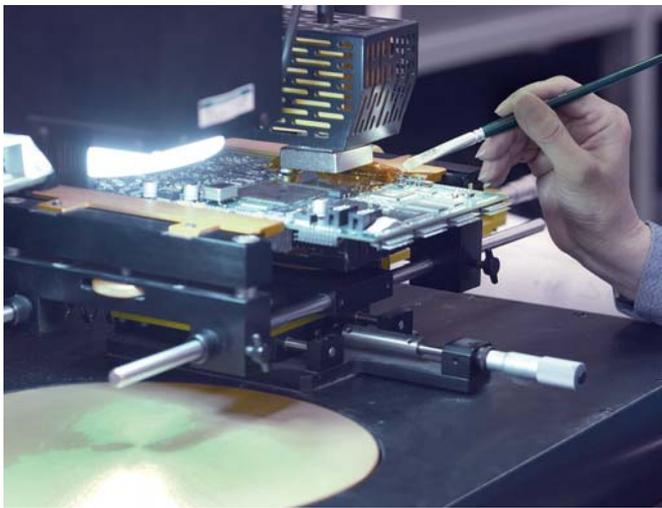
REDUCES COOLING LOAD

As atomized water droplets are absorbed in the air, the evaporative cooling effect reduces the building's cooling load. This provides significant energy savings in applications requiring both cooling and humidification.

LOW MAINTENANCE

The stainless-steel, high-pressure pump is designed to run for 8000 hours before its first maintenance check, and the stainless steel dispersion nozzles and manifolds are maintenance free.

Water treatment options available from DriSteem provide ultra-pure water that leaves no white dust. Reverse osmosis (RO) system automatically backflushes for extended membrane life.



Application versatility

- Data centers
- Industrial manufacturing
- Printing and distribution



THE MOST ADVANCED TECHNOLOGY

- Micro-turbines in precision-machined atomizing nozzles fragment water droplets into ultra-fine particles (90% are ten microns or less)
- Water delivered to nozzles at up to 1200 psi (8.27 MPa) requires no pressurized air
- Integral check valve in nozzle ensures no dripping when system shuts off

COOLING EFFECT SAVES ENERGY

- Every pound of atomized water absorbed in the airstream removes approximately 1000 Btu of heat from the air (every kg absorbed removes approximately 2250 kJ of heat)
- Significant energy savings when cooling and humidifying simultaneously
- Utility rebates can offset costs

LOW MAINTENANCE

- Stainless-steel pump is cooled by purified supply water; 8000 hours before maintenance check
- Stainless steel nozzles and manifolds require no maintenance
- Thorough water filtration protects stainless-steel components from corrosion and undue wear
- Final evaporation media as close as three feet (0.9 m) downstream from heating coil prevents downstream wetting

COMPREHENSIVE SYSTEM CONTROL AND MULTIPLE ZONE CAPABILITY WITH VAPOR-LOGIC® CONTROL

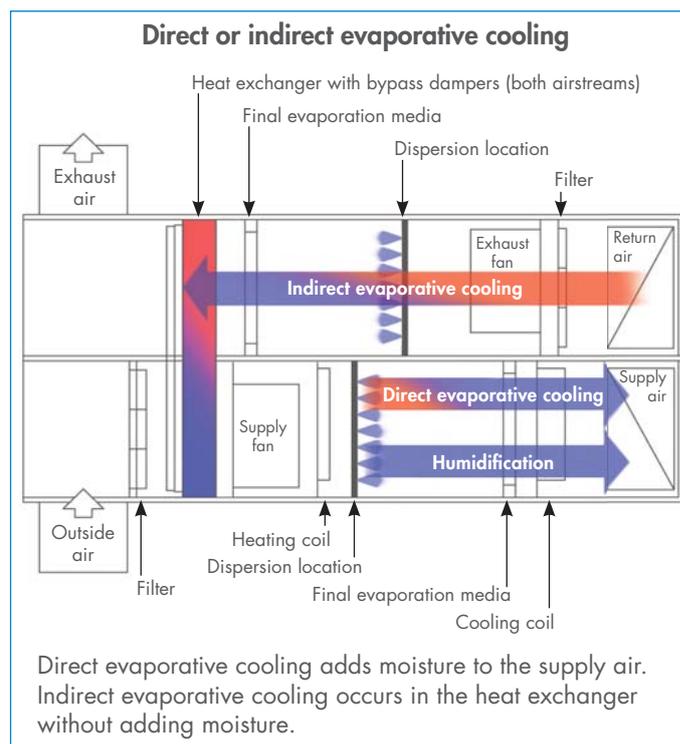
- Accurate, responsive RH control; PID control tunes system for maximum performance
- Set up, view, and adjust system functions with intuitive keypad/display or Web interface
- Integrates into any building automation system via Modbus® and optional BACnet® or LonTalk® communication protocols
- Individual zone monitoring and modulated staging valves provide tight control in all zones with optimized absorption and minimal water waste
- One system cools and humidifies multiple zones with separate demands

VERSATILE

- Cools and humidifies in air handlers, ducts, and open spaces
- Nozzle staging and pulsed modulation allow high turndown of system output
- Capacities up to 5500 lbs/hr (2495 kg/h), multiple systems can be combined for larger capacities
- Flexibility accommodates even the most challenging applications; extensive network of DriSteem Representatives available to assist with system layout and design

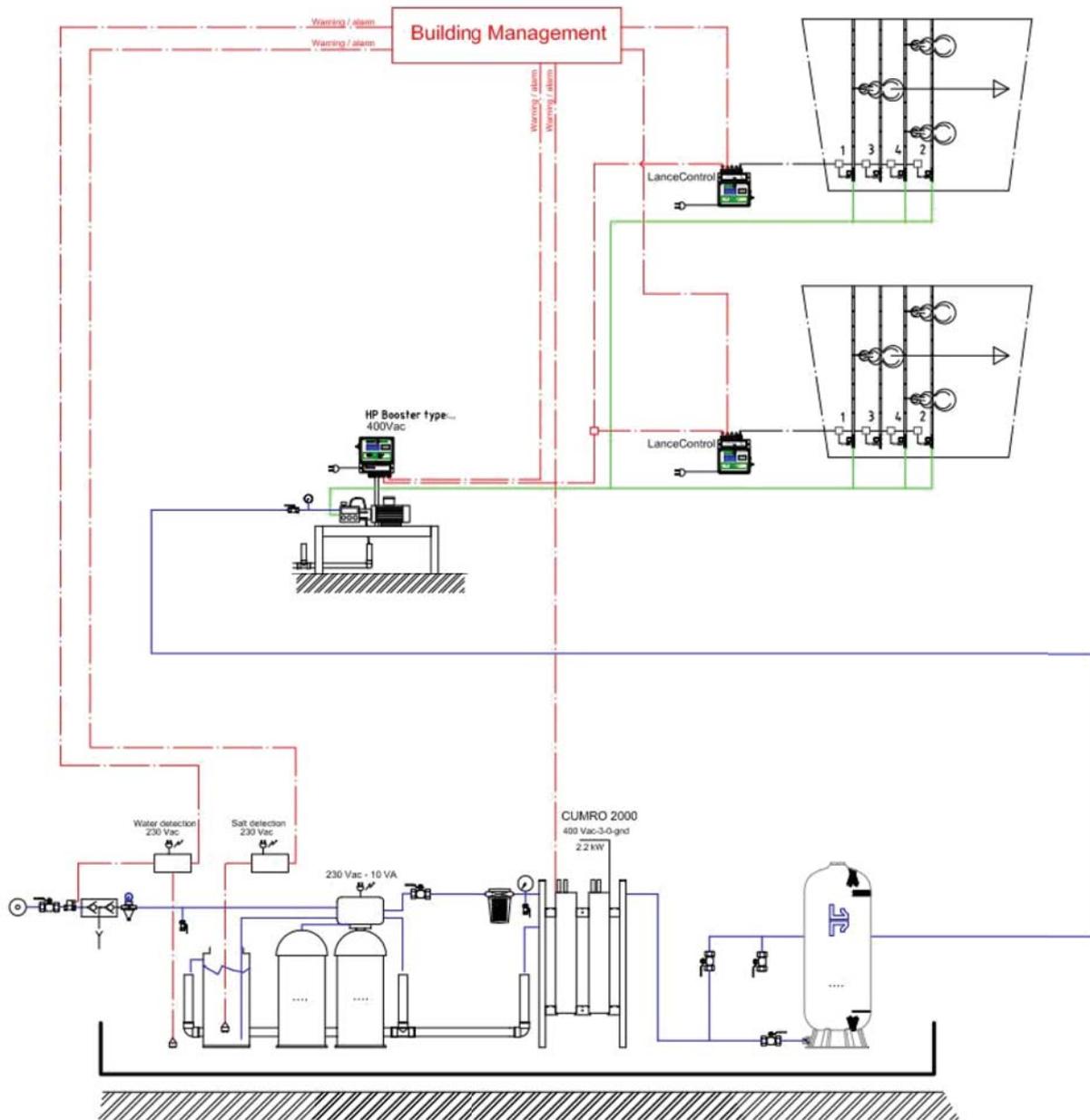
COMPLETE WATER TREATMENT SOLUTION

- Water treatment options available from DriSteem include RO hyperfiltration, particulate filtering, dechlorination, and duplex water softening
- Automatic back-flush technology ensures long RO membrane life
- Ultra-pure water eliminates white dust fallout and bacteria/virus proliferation that can occur when using potable water



Sequence of operation

A COMPLETE SYSTEM THAT INCLUDES WATER TREATMENT



When selecting the system you need for a good evaporation it is important to start with the water unit. Therefore this product brochure starts with the filtration and ends with the nozzles which vaporize the water in the air.

WATER FILTRATION

Sometimes there are solid particles in the water. It is important to remove these particles to prevent damage. DriSteem uses 2 types of filters.

- 5 inch water filtration
- 10 inch water filtration

5 INCH WATER FILTRATION

This unit is the smallest filtration we use to filter the water. This is only used for the high pressure pump with a capacity up to 480 l/hr.

10 INCH WATER FILTRATION

This is the most commonly used filtration. This is used for the bigger humidification units with a capacity above 500 l/hr.

Also a double filtration is often placed in front of the water softener. In some countries there are iron piping. Small corroded parts can get into the humidifiers and damage them.

5 INCH WATER FILTER



10 INCH WATER FILTER



Water Softener

A water softener is a device that replaces Calcium and Magnesium for Sodium. The amount of minerals barely changes, but the composition does change. The Calcium and Magnesium carbonates are much more difficult to clean than Sodium carbonate.

For a water treatment this is very important since this prevents the clogging of the nozzles. It also prolongs the lifespan of the reverse osmosis membranes.

DriSteem only uses the volume controlled units since these units are most dependable.

We also offer twin water softeners. For larger capacities this is most frequently used. This also ensures that even during the regeneration process the humidification unit is fed with softened water.

SINGLE VOLUME CONTROLLED WATER SOFTENER



TWIN WATER SOFTENER VOLUME CONTROLLED



Table 6-1:
Water softener

| Type | Cylinder | Capacity l with 1° gH |
|---------------------------------|----------|-----------------------|
| Volume controlled 8 liter | 8 | 32.000 |
| Volume controlled 12 liter | 12 | 48.000 |
| Volume controlled 30 liter | 30 | 120.000 |
| Twin volume controlled 20 liter | 20 | 80.000 |
| Twin volume controlled 30 liter | 30 | 120.000 |
| Twin volume controlled 40 liter | 40 | 160.000 |

A reverse osmosis (RO-unit) is a kind of highly sophisticated filter. Through a semi-permeable membrane mineral salts and ions are separated from the water. The unit filters 97% of all the salts and minerals. As the cut-off dimension of this nanofiltration is 1000 times smaller than the smallest bacteria we can rest assured that the bacteria and viruses are removed.

Because almost everything is removed from the water, RO water in its pure form is unsuitable as drinking water. For humidification systems however the water is ideal, the water is safe and clean. DriSteem has three different types of osmosis units:

- Cumro E-line
- Cumro HQ
- Cumro 2000

CUMRO E-LINE

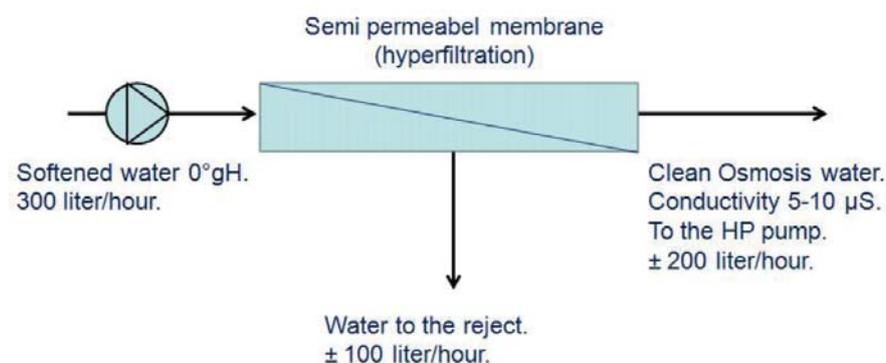
The Cumro E-line is the smallest and the most basic RO units, the capacity ranges from 6 up to 250 l/hr. These units are not equipped with WaterFresh and do not have maintenance or signals installed.

CUMRO HQ

The middle range units for the Cumro HQ from 140 up to 560 l/hr. They are installed with the unique WaterFresh system, which is specially designed for humidifiers. A conductivity control has also been built in so the conductivity is always in the required range. The unit is furthermore equipped with warning system.

CUMRO 2000

The Cumro 2000 is the largest unit which DriSteem has. The unit has a capacity from 500 up to 2000 l/hr on one single unit. The units are installed with the unique WaterFresh® system, which is specially designed for humidifiers. A conductivity control has also been built in so the conductivity is always in the required range. The unit is furthermore equipped with warning system.



CUMRO E-LINE



CUMRO HQ-LINE



CUMRO HQ-LINE



High-pressure units

DriSteem offers high pressure pumps in various versions. The standard version is the type Booster MIN. This type is available in capacities from 60 to 680 litres per hour.

The pumps are assembled on a stainless steel frame and a control unit is placed directly above the unit for a simple readout of the status display and operating hours counter.

The control unit is equipped with warning and maintenance signals and can be used as a stand alone unit. These units increase the pressure up to 80-100 Bar.

BOOSTER MIN



BOOSTER MIN



HPE



Table 8-1:
High-pressure units

| Type | Cylinder l/hr |
|-----------------|---------------|
| Booster Min 120 | 120 |
| Booster Min 220 | 220 |
| Booster Min 280 | 280 |
| Booster Min 380 | 380 |
| Booster Min 480 | 480 |
| Booster Min 680 | 680 |

These pumps are also manufactured with an attractive stainless steel cover, type HD Booster Plus. The low range units between 30 and 60 units are named the HPE. This is a more economically ranged unit designed specifically for the smaller project. These units cannot be connected to a buffer.

Table 8-2:
High-pressure units

| Type | Cylinder |
|------------------|----------|
| HPE 30 | 60 |
| HPE 60 | 60 |
| Booster Plus 120 | 120 |
| Booster Plus 220 | 220 |
| Booster Plus 280 | 280 |
| Booster Plus 380 | 380 |
| Booster Plus 480 | 480 |
| Booster Plus 680 | 680 |

High-pressure units with integrated reverse osmosis unit

The Combi Compact is the most advanced high pressure humidifier that DriSteem offers. The unit consists of a pressure unit with an integrated reversed osmosis unit.

The unit has its own control unit therefore it can work stand alone. If wanted the unit can also be connected to a building management system from which one can control it. The entire system has been designed to meet the highest hygiene norms like the VDI 6022 and has been approved as such by the TÜV Nord. The unique Water Fresh system has been integrated as well. Of course all the safety precautions like overload protection are included.

THE UNIT HAS A RANGE OF 120 UP TO 280 L/HR.

The low range units between 30 and 60 units are named the HPE Plus. This is a more economically ranged unit designed specifically for the smaller project. These units cannot be connected to a buffer.

A UV-c disinfection unit is optional for additional Legionella prevention.

The UV-c is a important gatekeeper which kills germs. By using these units a safe humidification can be achieved.

The UV-c units are equipped with a warning signal, which gives a signal when the UV-c Lamp needs to be replaced.

Although a UV-c is a good gatekeeper, it doesn't extract any minerals from the water. If you want to prevent evaporating minerals, a reversed osmosis is recommended.

COMBI COMPACT



HPE PLUS



UV-C UNIT



Table 9-1:
Specifications

| Capacity UV-c | 50 liter | 600 liter |
|-------------------|-------------|-------------|
| Article | 270 | 3179 |
| Dimension | 300 x 40 mm | 430 x 60 mm |
| Weight | 1 kg | 2 kg |
| Power consumption | 12 W | 16 W |
| Power connection | 230 VAC | |
| Water connection | 1/8" | 1/2" |
| Materials | AISI304 | |
| Lifespan | 8000 hours | |

Control units

The DriSteem Lance-Control® system is especially developed to enable the humidification to run smoothly. The unit is connected both to the building management system and to the humidification system.

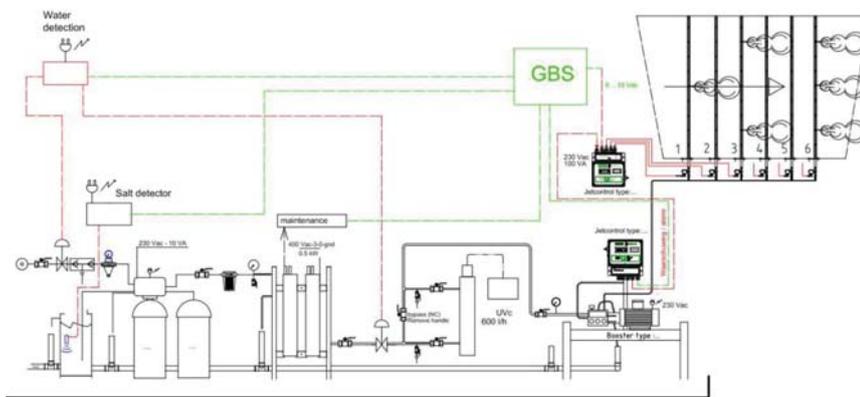
The 0-10 Volt control signal of the building control system is converted into a step control of the humidification. If there is no building management system an autonomic system can be offered as well depending on the number of lance groups, up to 15 control steps can be hydraulically controlled. This is more than sufficient to adequately humidify even demanding applications such as museums.

The Lance-Control also regulates the operation of the WaterFresh system. The WaterFresh system ensures that water never is stagnant in the humidification system. This is achieved by periodically briefly switching on and off the entire humidification system (only if in the previous 24 hours there has been no demand for humidification). This arrangement provides a Legionella safe system during the summer situation when less humidification is needed.

With this control method DriSteem complies with the guidelines of the ISSO 55.3 in such a way that one water quality analysis per year is sufficient.

With this 24-hour cycle, DriSteem complies with the requirements of the VDI-6022 certification. With a longer cycle, Legionella safety is not guaranteed according to the VDI.

LANCE-CONTROL®



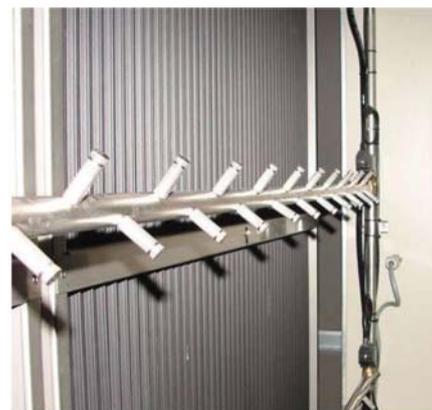
The lances can be placed very easily inside the air handling unit. There needs to be only one conduit in the AHU. The water is then distributed by a header to the lances. Each lance can then be put on and of with a valve making it possible to turn them off separately and to regulate the humidity very precisely.

The Lances are made of stainless steel and made to the exact size of your air handling unit. Replacing them is easy if needed. The capacity and the number of lances are based on the capacity needed and the space available.

The standard lances are equipped with the 150 μ nozzles. Other nozzles can be used if bigger capacity is needed however this does take longer to evaporate.

The nozzles are entirely produced in stainless steel and feature a swirl chamber and durable tip. These nozzles are placed on the lance at an angle of 90° for an optimal distribution.

STAINLESS STEEL LANCES



STAINLESS STEEL LANCES



Table 11-1:
Specifications

| Type HP nozzle (hole diameter) | 100 μ m | 150 μ m | 200 μ m | 300 μ m | 400 μ m |
|--------------------------------------|-----------------|-------------|-------------|-------------|-------------|
| Part number | 10362 | 10294 | 10359 | 10360 | 10361 |
| Dimensions in (diameter x length) | Ø10 x 34 mm | | | | |
| Weight | 14 g | | | | |
| Minimum - maximum operating pressure | 40 - 140 bar | | | | |
| Recommended operating pressure | 80 bar | | | | |
| Material | Stainless steel | | | | |
| Droplet size D ₅₀ @ 80bar | 15 - 20 μ m | | | | |
| Humidification capacity @ 80 bar | 2.0 l/h | 2.7 l/h | 3.8 l/h | 6.6 l/h | 9 l/h |
| Anti-drip valve | Integrated | | | | |
| Swirl chamber | Integrated | | | | |
| Filter | Integrated | | | | |

Complementary systems for AHU's

PP PLATING INSIDE THE AHU

Since we use reverse osmosis water inside the AHU it is important to make the unit correctly designed. For a good evaporation it is important to have a section that is long enough and waterproof. Since a high pressure system has a longer evaporation trajectory than a steam humidifier sometimes some changes might be needed to the AHU. By placing a PP section we can prolong the section.

At the end of each 'wet section' there needs to be a droplet eliminator installed that is suited for high pressure humidification. DriSteem can deliver fully assembled humidifiers.

PP PLATING INSIDE AHU AND DROPLET ELIMINATOR



Table 13-1:
Integrated systems with RO pump and HP aggregate in one unit

| Type | Size L x H x W mm | Connected load kW | Power consumption | Weight kg |
|-------------------|----------------------|----------------------|----------------------|--------------|
| HPE Plus 30 | 850 x 700 x 430 | 1,2 (400 V) | 0.9 | 70 |
| HPE Plus 60 | 850 x 700 x 430 | 1,2 (400 V) | 0.9 | 75 |
| Combi Compact 140 | 850 x 700 x 430 | 1.5 (400 V) | 1.0 | 70 |
| Combi Compact 220 | 850 x 700 x 430 | 2.0 (400 V) | 1.5 | 75 |
| Combi Compact 280 | 850 x 700 x 430 | 2.4 (400 V) | 1.8 | 80 |
| Combi Compact 380 | 1,200 x 800 x 400 | 2.9 (400 V) | 2.2 | 85 |

Table 13-2:
Basic systems with only RO or Hp aggregate

| Type | Size L x H x W mm | Connected load kW | Power consumption | Weight kg |
|-----------------------|----------------------|----------------------|----------------------|--------------|
| Cumro E 6 | 600 x 340 x 340 | 0.7 (230 V) | 0.45 | 27 |
| Cumro E 20 | 600 x 340 x 250 | 0.7 (230 V) | 0.45 | 27 |
| Cumro E 90 | 600 x 340 x 250 | 0.7 (230 V) | 0.45 | 34 |
| Cumro E 140 | 750 x 350 x 330 | 0.7 (230 V) | 0.45 | 27 |
| Cumro E 250 | 350 x 1.400 x 280 | 0.7 (230 V) | 0.65 | 40 |
| Cumro HQ 140 | 850 x 800 x 400 | 1.0 (230 V) | 0.65 | 54 |
| Cumro HQ 280 | 850 x 800 x 400 | 1.0 (230 V) | 0.65 | 57 |
| Cumro HQ 420 | 850 x 800 x 400 | 1.1 (230 V) | 0.75 | 62 |
| Cumro HQ 560 | 850 x 800 x 400 | 1.1 (230 V) | 0.75 | 65 |
| Cumro 2000, 500 | 600 x 1.700 x 600 | 2.2 (400 V) | 1.6 | 100 |
| Cumro 2000, 750 | 600 x 1.700 x 600 | 2.2 (400 V) | 1.6 | 135 |
| Cumro 2000, 1000 | 600 x 1.700 x 600 | 2.2 (400 V) | 1.6 | 170 |
| HPE 30 | 850 x 700 x 430 | 1.0 (400 V) | 0.7 | 50 |
| HPE 60 | 850 x 700 x 430 | 1.0 (400 V) | 0.7 | 55 |
| Booster Pump Plus 120 | 850 x 800 x 400 | 1.0 (400 V) | 0.7 | 70 |
| Booster Pump Plus 220 | 850 x 800 x 400 | 1.7 (400 V) | 1.3 | 78 |
| Booster Pump Plus 280 | 850 x 800 x 400 | 2.0 (400 V) | 1.6 | 86 |
| Booster Pump Plus 380 | 1.200 x 800 x 400 | 2.7 (400 V) | 2.2 | 94 |
| Booster Pump MIN 120 | 680 x 1.110 x 490 | 1.0 (400 V) | 0.7 | 60 |
| Booster Pump MIN 220 | 680 x 1.110 x 490 | 1.7 (400 V) | 1.3 | 68 |
| Booster Pump MIN 280 | 680 x 1.110 x 490 | 2.0 (400 V) | 1.6 | 76 |
| Booster Pump MIN 380 | 680 x 1.110 x 490 | 2.1 (400 V) | 1.7 | 84 |
| Booster Pump MIN 480 | 680 x 1.110 x 490 | 2.2 (400 V) | 1.8 | 92 |
| Booster Pump MIN 680 | 680 x 1.110 x 490 | 2.2 (400 V) | 1.8 | 92 |

Table 13-3:
Additional systems

| Type | Size L x H x W mm | Connected load kW | Power consumption | Weight kg |
|-------------------------|----------------------|----------------------|----------------------|--------------|
| Lance-control | 250 x 150 x 250 | 0.2 (230 V) | 0.1 | 2 |
| Water softener 8 | 400 x 600 x 600 | 0.2 (230 V) | 0.1 | 25 |
| Water softener 12 | 400 x 1.200 x 600 | 0.2 (230 V) | 0.1 | 30 |
| Waterontharder 30 | 800 x 1.200 x 600 | 0.4 (230 V) | 0.2 | 35 |
| Water softener 30, twin | 1.200 x 1.200 x 600 | 0.6 (230 V) | 0.4 | 65 |
| Water softener 40, twin | 1.200 x 1.200 x 600 | 0.8 (230 V) | 0.5 | 85 |

Note: The weight of the water softeners is for empty units.

Area-type systems for direct room humidification

The UFO Axial high-pressure humidifier is ideal for mounting humidification in high rooms, where the unit can be installed under the ceiling. The unit humidifies to all sides. The UFO axial is equipped with 6 stainless steel nozzles, with a unique closing system which prevents droplets. The moisture evaporates through the stainless steel nozzles assisted by the built-in fan.

To prevent lime deposits on the humidifiers which causes clogging of the nozzles we advise to use reverse osmosis water.

For bacteriological reasons we recommend a water temperature of 8° Celsius for the humidifiers.

UFO AXIAL HIGH-PRESSURE UNIT



MAIN FEATURES

- Large capacity
- Drip-free evaporation
- Air assisted
- Low sound level
- Low maintenance
- Ceiling assembly

Table 14-1:
Specifications

| | |
|---|--|
| Sizes [ØxH] in [mm] | 570 x 190 |
| Weight [kg] | 5 |
| Power Consumption [W] | 68 |
| Standard capacity of the nozzle [l/hr] | 2,7 |
| Standard number of nozzles | 6 |
| Recommended water German Hardness [dH] | 0-4 |
| Conductivity water [μ S/cm] | 10-150 |
| HP UFO saturnus Axial is connectable to | HPE, HPE+, Booster Min, Booster Plus or CombiCompact |
| Control unit | JetControl |
| Material | Plastic housing and stainless steel nozzle and bracket |
| Minimal height [m] | 3.5 |
| Minimal zone for evaporation [m] | 3.5 |
| Water temperature [°C.] | 0-40 |
| Ambient temperature, min.-max. [°C] | 0-40 |

The HP UFO Apollo humidifier has been designed to be mounted on a long straight wall or appended from the ceiling in a corridor (for example in a warehouse).

The HP UFO Apollo can be supplied in three different sizes: with 4, 6 and 8 nozzles. The water is vaporized with a pressure of 80 – 100 bars through the stainless steel nozzles and the strong built-in fan. To prevent lime deposits on the humidifiers which causes clogging of the nozzles we advise to use reverse osmosis water.

For bacteriological reasons we recommend a water temperature of 8° Celsius for the humidifiers.

UFO APOLLO HIGH-PRESSURE UNIT



MAIN FEATURES

- Large capacity
- Drip-free evaporation
- Integrated air support
- Low sound level
- Low maintenance
- Wall or ceiling mounting
- Integrated water valve

Table 15-1:
Specifications

| | |
|---|--|
| Dimensions [mm] [height x length x width] | 3100 x 200 x 550 |
| Weight [kg] | 14 |
| Power Consumption [Watt] | 68 |
| Standard capacity of the nozzle [l/hr] | 2.7 |
| Standard number of nozzles | 4 – 6 - 8 |
| Recommended water | 0 - 4 |
| Conductivity water [μ S/cm] | 10 - 150 |
| HP UFO Apollo can be connected to | HPE, HPE+, Booster Min, Booster Plus or CombiCompact |
| Control unit | JetControl 200/220/230 |
| Material | PVC housing, stainless steel nozzles, bracket and piping |
| Minimal height [m] | 3.5 |
| Minimal zone for evaporation [m] | 3.5 |
| Water temperature [°C] | 0 - 40 |
| Operating Pressure [bar] | 80 - 100 |
| Water connection | HP hose DN6 with Cumulus M12 o-ring connector |
| Electrical connection | 230 VAC, 50 – 60 Hz, wiring 4 leads 0.75mm ² |
| Ambient temperature, min.-max. [°C] | 0 – 40 |

Flex high-pressure

The Flex high pressure humidifier is ideal for humidification in rooms where there are low ceilings, or where the humidifiers need to be directed flexible. The Flex high pressure humidifier can be directed to one side as displayed on the picture.

The Flex HP-1 is equipped with 1 stainless steel nozzle and with a unique closing system which prevents dripping. The unit can be aimed at every angle which makes it very easy to direct the unit to the best place where it needs to humidify.

- The moisture is evaporized through the stainless steel nozzles and the built-in fan. With the help of the built-in fan the moisture absorption is much better.
- To prevent lime deposits on the humidifiers which causes clogging of the nozzles we advise to use reverse osmosis water.
- For bacteriological reasons we recommend a water temperature of 8° Celsius for the humidifiers.

MAIN FEATURES

- Large capacity
- Drip-free evaporation
- Integrated air support
- Low sound level
- Low maintenance
- Wall or ceiling mounting
- Integrated water valve

FLEX HP-1 UNIT



**Table 17-1:
Specifications**

| | |
|---|--|
| Sizes [LxWxH] in [mm] | 90 x 135 x 135 |
| Weight [kg] | 1 |
| Power Consumption [W] | 40 |
| Standard capacity of the nozzle [l/hr] | 2,7 |
| Standard number of nozzles | 1 |
| Recommended water | 0-4 |
| Conductivity water [μ S/cm] | 10-150 |
| HP UFO saturnus Axial is connectible to | HPE, HPE+, Booster Min, Booster Plus or CombiCompact |
| Control unit | Jet Control |
| Material | Plastic housing and stainless steel nozzle and bracket |
| Minimal height [m] | 2,5 |
| Minimal zone for evaporation [m] | 3,5 |
| Water temperature [°C.] | 0-40 |
| Ambient temperature, min.-max. [°C] | 0-80 |

Evaporation efficiency

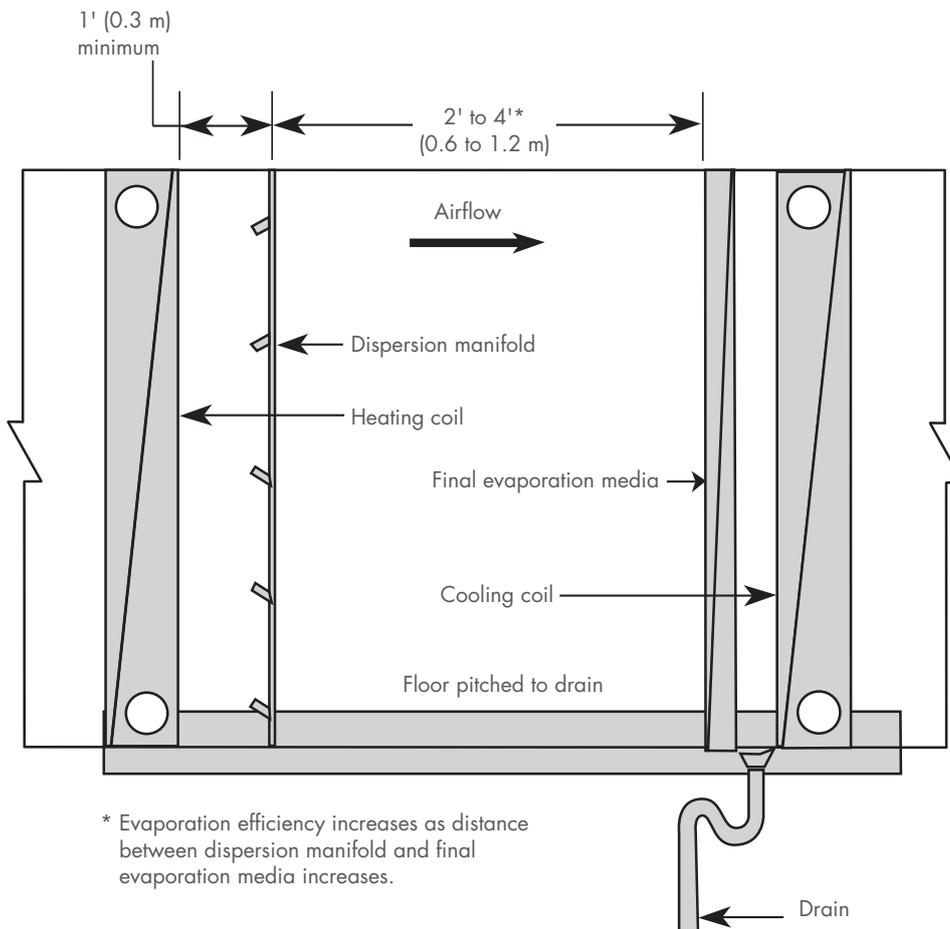
EVAPORATION EFFICIENCY IN AIR HANDLERS AND DUCTS

Once water is dispersed into a moving airstream, many factors affect evaporation efficiency, or how much of that water will evaporate. Factors affecting evaporation efficiency are included in the following example.

The following are known:

- Humidification load = 385 lbs/hr (175 kg/h)
- Available evaporation distance = 4 ft (1.2 m)
- Leaving air temperature = 55 °F (12.8 °C)
- Air velocity = 500 fpm (2.54 m/s)
- Entering air grains of moisture per pound of dry air = 15
(Entering air grams of moisture per kilogram of dry air = 2.1)
- Entering air dew point temperature = 20 °F (-6.7 °C)
- Leaving air RH = 55%

AHU INSTALLATION EXAMPLE



USING THE EVAPORATION EFFICIENCY CHART

Using 55% leaving air RH and 15 grains of moisture per pound of dry air, the chart identifies:

- Required entering air temperature = 68 °F (20 °C)
- Evaporation efficiency = 70%

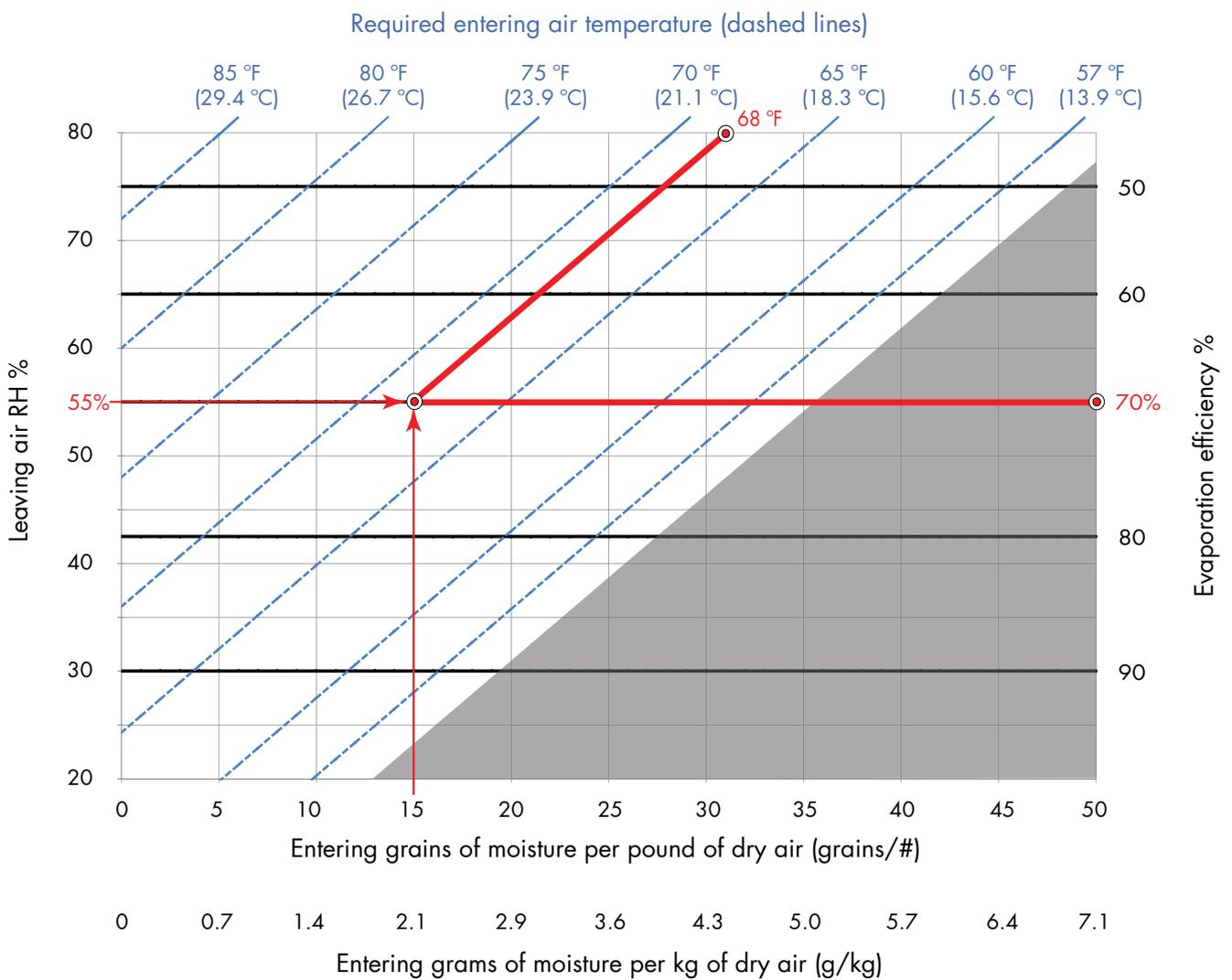
To accurately size a High-Pressure System, first define all the values, as shown in this section. This will ensure a system that maximizes efficiency and delivers consistent output.

From these values, required system capacity can be calculated:

$$\frac{\text{Load}}{\text{Evaporation efficiency}} = \text{Required system capacity}$$

$$\frac{385 \text{ lbs/hr}}{0.7} = 550 \text{ lbs/hr} \quad \text{or} \quad \frac{174.6 \text{ kg/h}}{0.7} = 249.4 \text{ kg/h}$$

EVAPORATION EFFICIENCY CHART*

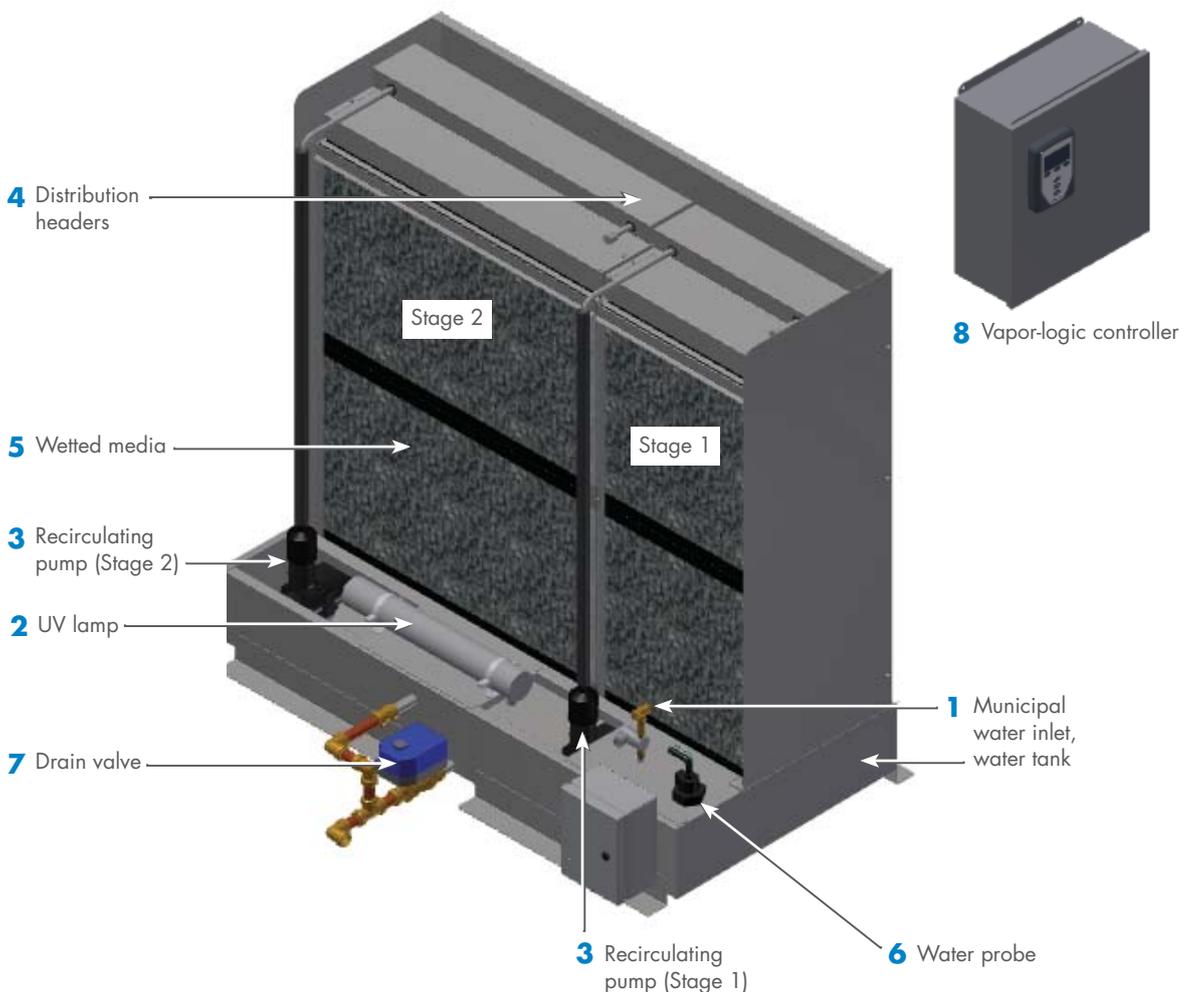


* Evaporation efficiency shown here is based on 4-ft evaporation distance, 55 °F leaving air temperature, and 500 fpm air velocity.

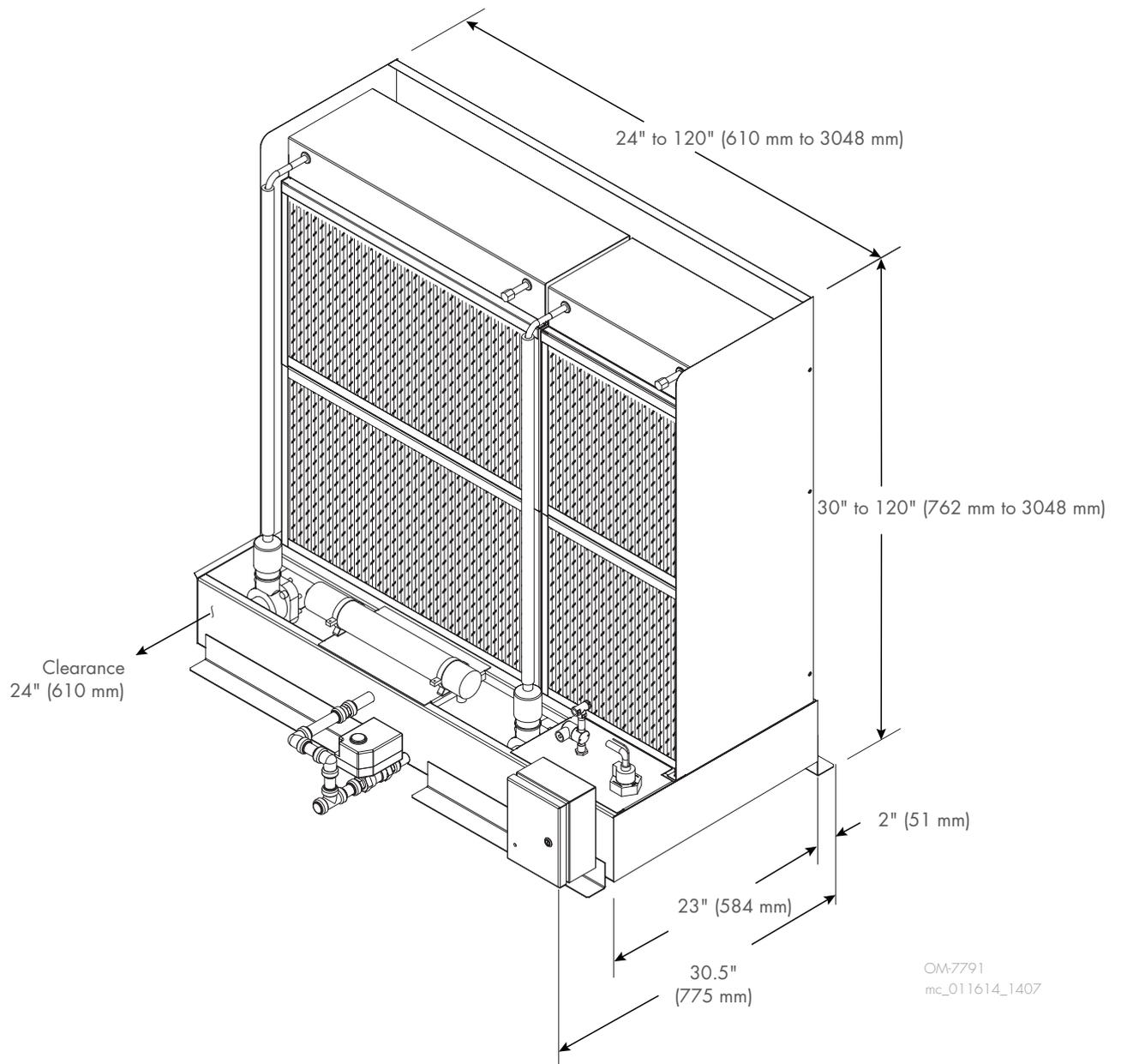
Wetted Media System sequence of operation

SEQUENCE OF OPERATION

- 1 Water enters from the municipal water supply and fills the tank.
- 2 The recirculation pump cycles tank water through the Ultra-violet (UV) lamp and then through the tank to keep solids in suspension for easy drainage.
- 3 Dedicated pumps supply water to each stage of media (up to three stages available).
- 4 Distribution headers evenly distribute water over each media stage.
- 5 Air flowing through the wetted media is cooled and humidified.
- 6 Probe measures water level and usage.
- 7 System draining is optimized to minimize water usage and media scaling.
- 8 Vapor-logic controller manages staged response to system demand and water cycles of concentration.



DIMENSIONS AND MINIMUM RECOMMENDED CLEARANCES



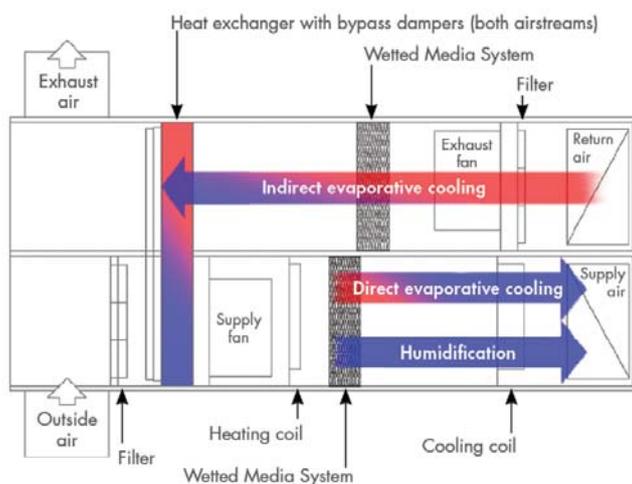
Wetted Media System specifications

Table 22-1:
Wetted Media System specifications

| Item | Specification |
|---|---|
| System capacity | Varies with application. See graph on page 15 for system efficiencies and to calculate system capacity. |
| System voltage/phase/Amp draw | 120 Volts, 1 phase: 1 stage: 3.0 Amps 2 stages: 4.2 Amps 3 stages: 5.5 Amps |
| Fuse size* | 120 Volts, 1 phase: 15 Amps |
| Height | 30" – 120" (762 mm – 3048 mm) |
| Width | 24" – 120" (610 mm – 3048 mm) |
| Depth | 23" (584 mm) |
| Tank/Frame Weight, Operating – lbs (kg) ** | 75 lbs x system width(ft) [111.6 kg x system width (m)] |
| Media Weight, Operating – lbs (kg) ** | 10 lbs x [system width (ft) x (system height (ft) – 1 ft)] (14.9 kg x [system width (m) x (system height (m) – 1 m)]) |
| Tank/Frame Weight, Shipping – lbs (kg) ** | 30 lbs x system width(ft) [111.6 kg x system width (m)] |
| Media Weight, Shipping – lbs (kg) ** | 2 lbs x [system width (ft) x (system height (ft) – 1 ft)] (3.0 kg x [system width (m) x (system height (m) – 1 m)]) |
| Supply water pressure | 25 – 80 psi (166 – 552) kPa |
| Supply water connection, diameter | 3/8" – 3/4", (DN10 – DN20) depending on flow rate |
| Drain connection, diameter | 1" (DN25), copper |
| Recommended inlet water flow rate | 3x system capacity or 11 gpm (42 L/m) max. |
| Airflow velocity, maximum recommended | 700 fpm (3.5 m/s) through wetted media without mist eliminator. (Contact DriSteem for airflow velocities above 700 fpm.) |
| Water quality requirements | System recycle rate depends on water quality. Contact DriSteem for more information. |
| * Wiring and branch circuit protection (Type RK1, J, or T fusing) to be provided by installer in accordance with National Electrical Code (NEC) requirements. | |
| ** System weight = tank/frame weight + media weight | |

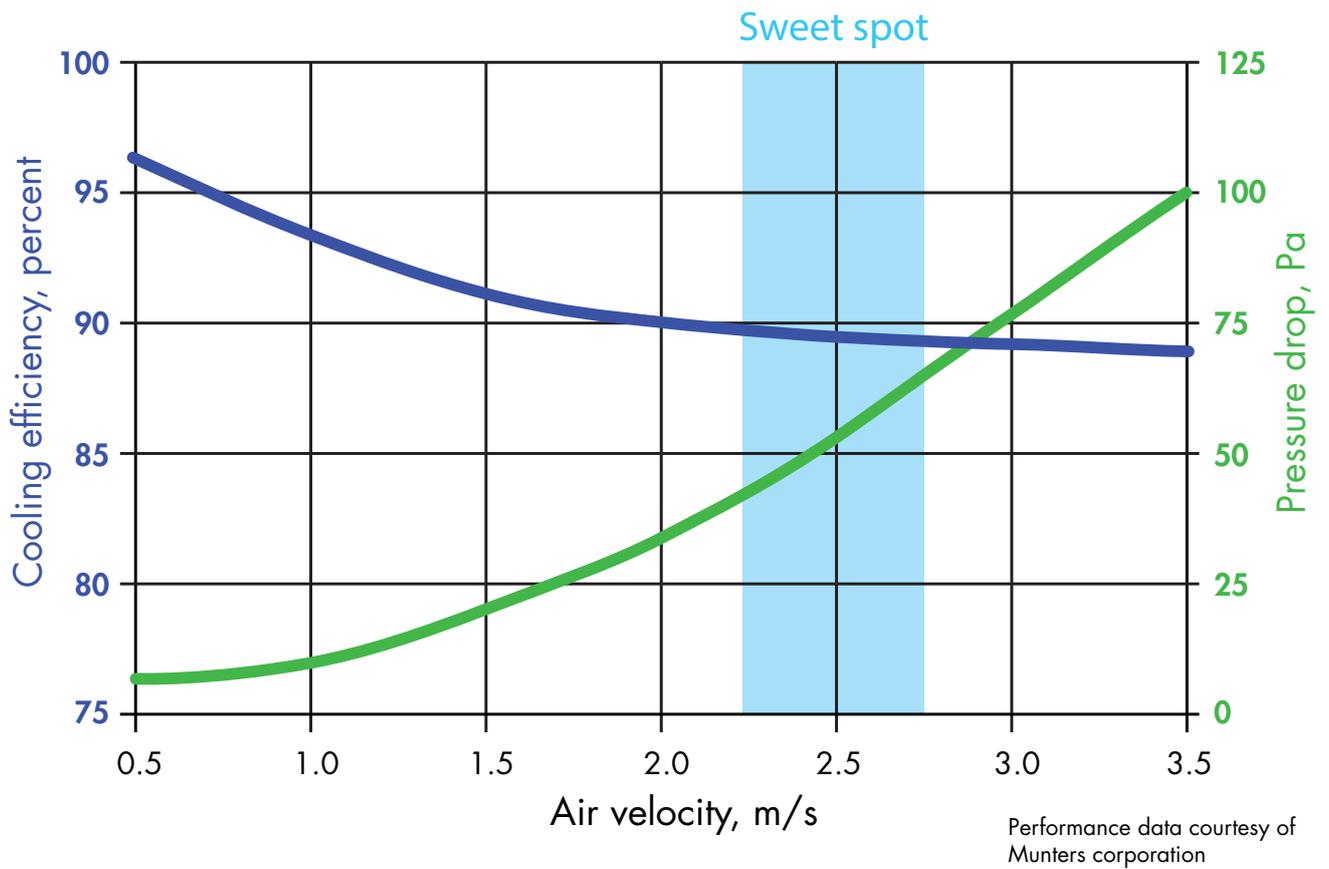
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DIRECT OR INDIRECT EVAPORATIVE COOLING



Direct evaporative cooling adds moisture to the supply air. Indirect evaporative cooling occurs in the heat exchanger without adding moisture. A Wetted Media System is shown here. See page 2 for an illustration of direct/indirect cooling using a High-Pressure System.

WETTED MEDIA SYSTEM COOLING EFFICIENCY AND PRESSURE DROP



DriSteem Corporation

A subsidiary of Research Products Corporation
An ISO 9001:2000 certified company

U.S. Headquarters:

14949 Technology Drive
Eden Prairie, MN 55344
800-328-4447 or 952-949-2415
952-229-3200 (fax)

European office:

Marc Briers
Grote Hellekensstraat 54 b
B-3520 Zonhoven
Belgium
+3211823595 (voice)
+3211817948 (fax)
E-mail: marc.briers@dristeem.com

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EXPECT QUALITY FROM THE INDUSTRY LEADER

For more than 45 years, DriSteem has been leading the industry with creative and reliable humidification solutions. Our focus on quality is evident in the construction of the DriSteem High-Pressure System, which features cleanable, stainless steel construction. DriSteem leads the industry with a Two-year Limited Warranty and optional extended warranty.

For more information

www.dristeem.com
dristeem-europe@dristeem.com

For the most recent product information visit our website:

www.dristeem.com

