



HP
SERIES



Cool, Clean and Comfortable Nortec HP-Series

Adiabatic In-Duct High Pressure
Humidification System...
Simply Awesome



Control Panel

A clear and intuitive control panel makes it easy for the Building Management System (BMS) to communicate with the pump station. The touch screen interface is user friendly and personnel can enter system requirements and read vital data.

Integrated RO System

An optional integrated reverse osmosis system allows for a reliable and hygienic operation.

Energy Efficient Motor

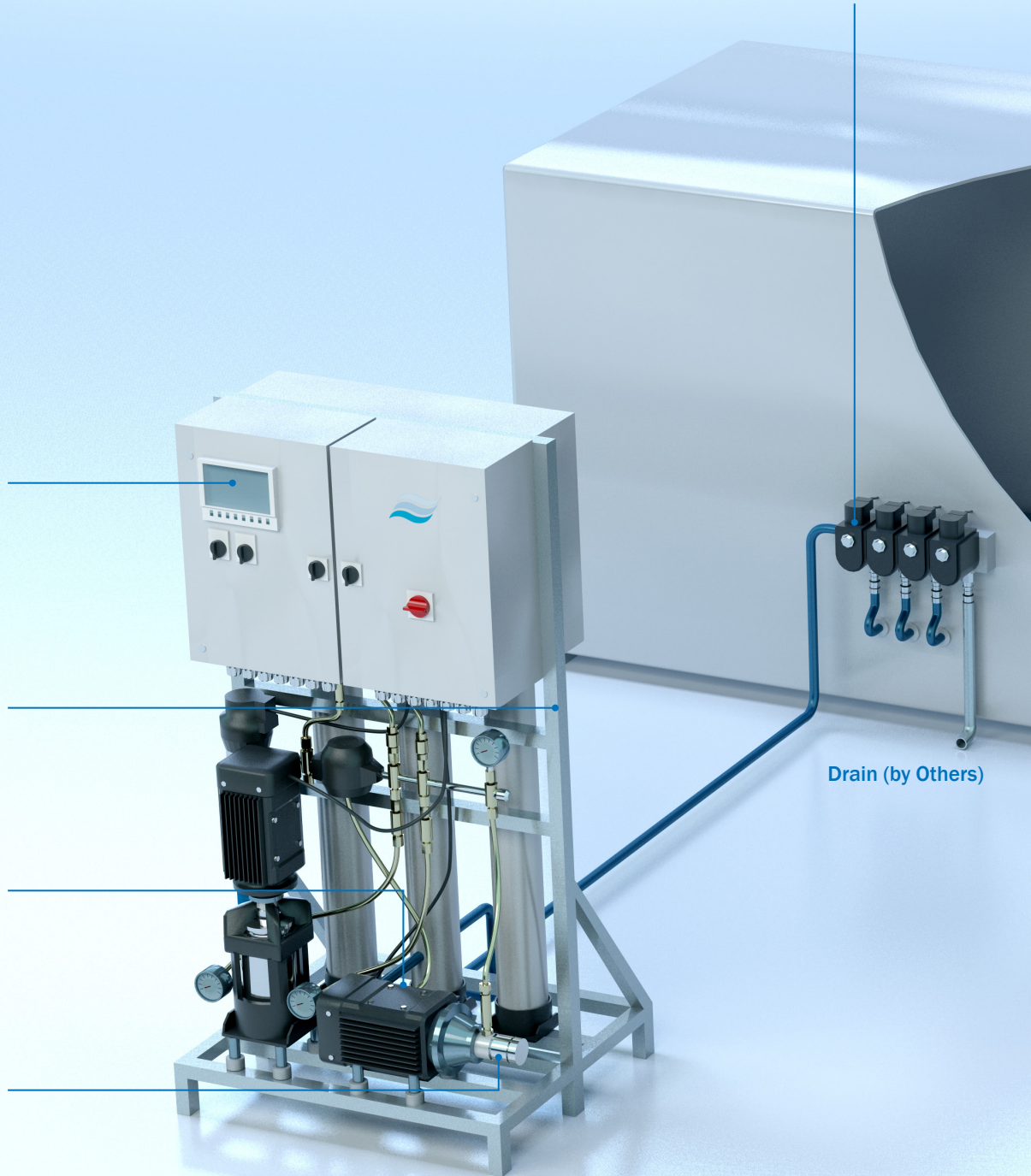
High quality Grundfos electric motor that gives you one of the lowest energy consuming humidifiers, without sacrificing quality.

High Pressure Pump

With water lubricated pumps you can guarantee a longer life than oil lubricated pumps. You also have the added peace of mind of clean water being used inside your pumping system.

Valve Block

The valve block provides control of various nozzles. Clients have the choice of the standard 7-stage valve block (with $\pm 4\%$ humidity control) or the more advanced 15-stage (with $\pm 2\%$ humidity control).

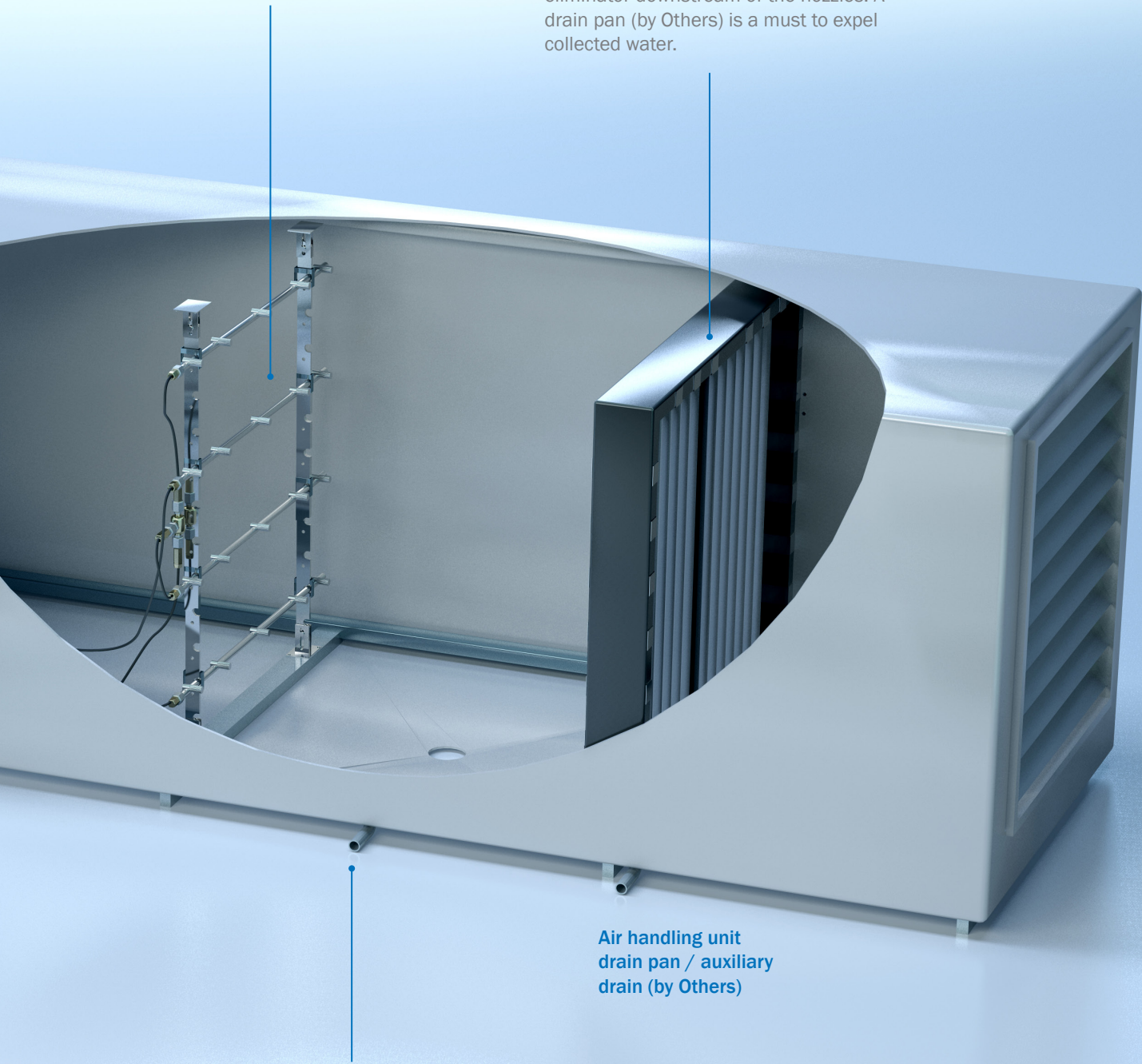


Nozzle Grid / Manifold Assembly

The stainless steel nozzle grid assembly allows for long life and durable mounting of parts.

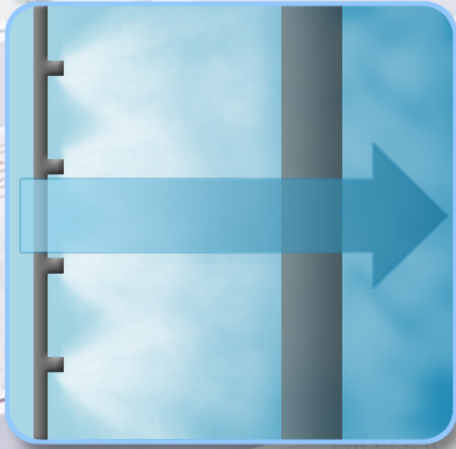
Mist Eliminator

In order to prevent the fine water droplets from wetting any downstream-components, Nortec recommends a mist eliminator downstream of the nozzles. A drain pan (by Others) is a must to expel collected water.



Air handling unit drain pan / auxiliary drain (by Others)

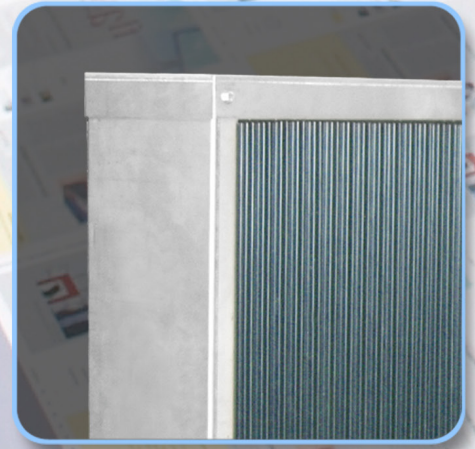
Air handling unit drain pan / auxiliary drain (by Others)



Fogging Principle



Advanced Nozzle Technology



Droplet Free Humidification /

The Nortec HP-Series high pressure nozzle system supplies treated water at 1015 psi for installation in an air duct or air handler. Advanced atomizing nozzles generate a fine mist which is absorbed into the air stream while a highly efficient droplet separator contains any excess water within the spraying section. Cool, humidified air is then released into the air stream, creating a healthy and productive environment.

Precision manufactured stainless steel nozzles atomize water into a fine mist. The nozzles are installed on stainless steel manifolds and are evenly distributed throughout the duct or air handler. This ensures that water quickly and efficiently evaporates into the air stream. With seven steps of control standard, the system's output is scaled to the humidification needs at that moment.

Any water which isn't evaporated within the available distance is captured and drained off by a droplet separator. The droplet separator is designed for quick and easy assembly and features stainless steel framing.



Why Nortec HP-Series?

Minimal Evaporation Distance

The extremely fine fog droplets evaporate quickly and most are absorbed within 2.6 to 4.2 ft (0.8 to 1.3 m). This ensures high water efficiency and avoids the need for long humidifier duct sections.

Premium Quality and Low Maintenance

Flexible, modular components assemble easily and require minimal maintenance. Precision water-lubricated stainless steel pumps are guaranteed for 8000 hours of operation and require no oil or belt changes. All wetted parts are corrosion resistant and suitable for highly pure water. Pump stations are thoroughly tested at the factory and feature easily accessible components, simplifying maintenance.

Safe and Hygienic Operation

All wetted parts are manufactured in strict accordance with the HACCP/ISO 22000 hygiene management system. Intelligent control systems are included as a standard feature include automatic flush functions, ensuring that water in the system is cycled at least 4 times per day. Additionally, systems can be ordered with an optional hygiene management program that fulfills the requirements of the VDI 6022 standard.

Uniform Distribution

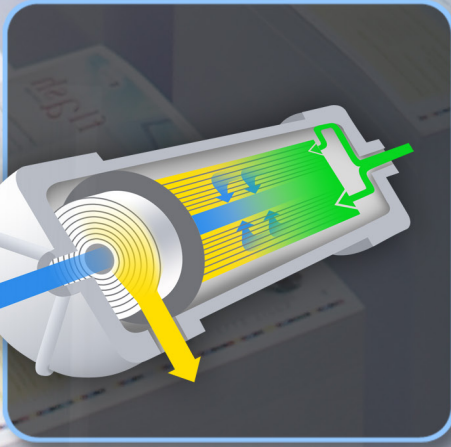
Durable stainless steel nozzle manifolds and supports are easy to assemble and allow precise nozzle placement. This enables even humidity distribution across the duct and ensures optimal cooling and humidification performance.

Flexible Capacities

The Nortec HP-Series is available in capacities from 26 to 2860 lbs/hr (10 to 1300 kg/hr) allowing it to be adapted to almost any application. Low system pressure losses and an available variable frequency drive reduce energy consumption and increase efficiency.




Precise Control

Intelligent valve staging, controls output to an accuracy of +/- 4%, ensuring consistent control of humidity for a wide variety of applications. In cases where even tighter control is required, an available high precision system enables accuracies of up to +/- 2%.



Integrated Water Treatment

Featuring an optional reverse osmosis water system built directly onto the pump skid, the Nortec HP-RO is the perfect solution for applications where demineralized water is not readily available. High quality reverse osmosis membranes provide long life, and produce clean water supply for the nozzles.

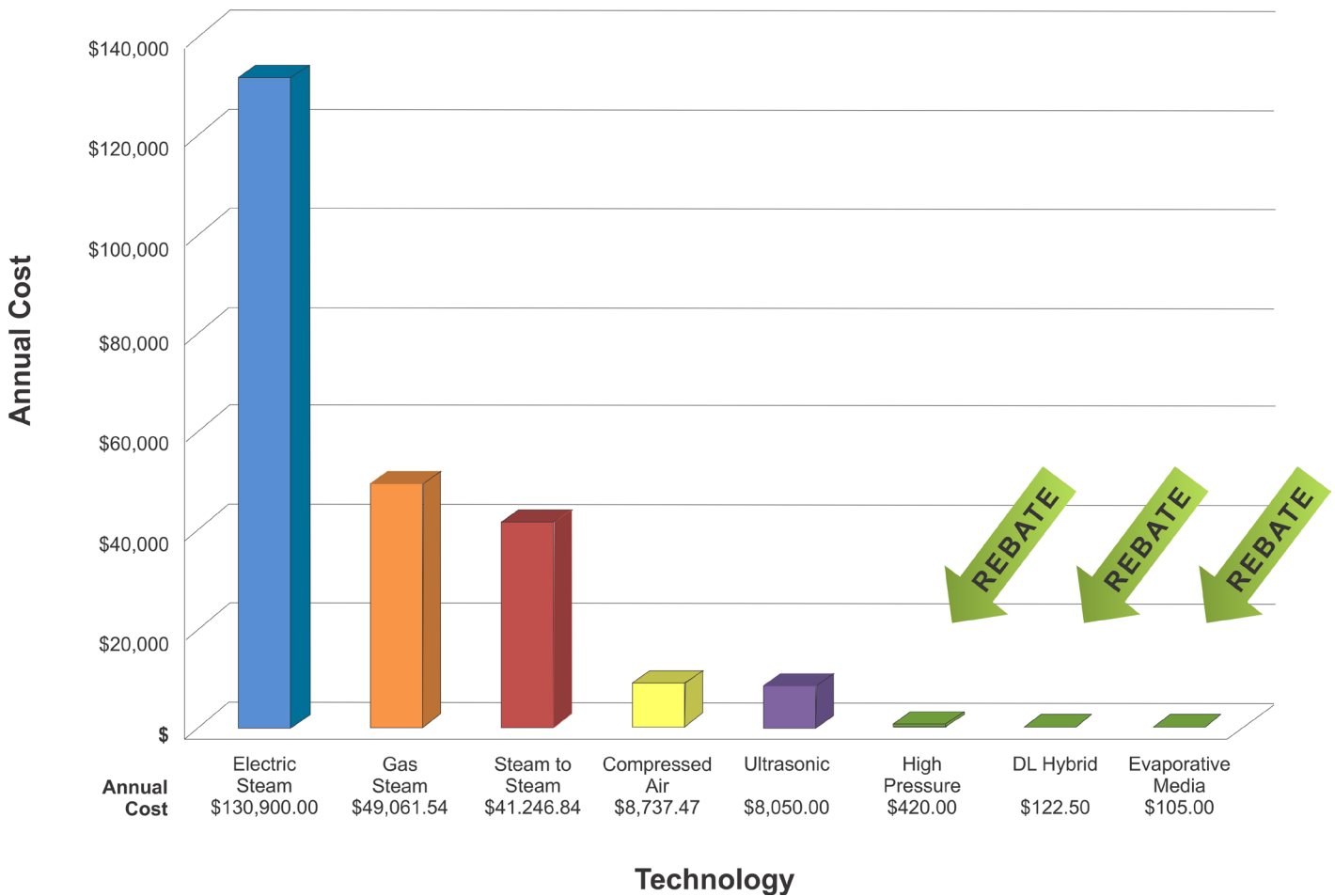
-  Demineralized water
-  Concentrated water
-  Domestic water

Adiabatic Advantage

Compared to other humidification technologies, the HP series gives you one of the best energy uses compared to isothermal humidification technologies. The adiabatic technology utilizes very minimal energy to create humidification for your buildings needs. Whether its process control, production improvements, improving

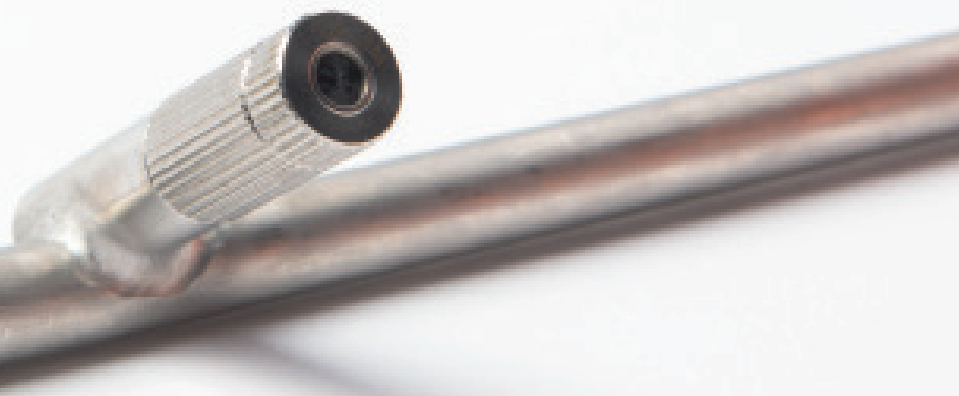
indoor air quality or evaporative cooling. The HP Series has you covered. Nortec's past projects show you that you can not only pay for your project in full over time but adiabatic technologies can help qualify for energy incentives through state sponsored rebate programs.

Average Annual Operating Costs by Technology



Assumptions:

- 1000 lbs/hr capacity, 3500 hours/year
- \$1.20 per therm.
- \$0.10 per kWh
- Does not include energy needed for heating (pre-heat/re-heat)
- Does not include water treatment
- May qualify for energy incentive rebates





Robust, Hygienic and Clean

All parts that come into contact with water are corrosion resistant. All tubing where water flows through is food grade and safe for the food industry. Stainless steel nozzle grid allows for a durable clean installation.

All this coupled with Nortec's Field technicians allow for a smooth hassle free install and operation.

Experts on Site

Nortec's field technicians are experts of their domain. Every one of our field techs receives constant updates on our product ranges. Each of our technicians is BactiQuant certified - meaning they can

field test the water that is used and ensure it is safe. With experts on site you can do preventative maintenance visits, which ensures your systems runs at peak performance.

Projects to Boast

It is no wonder companies such as:

- Facebook (Data Center)
- ULINE (Storage and Packaging)
- Amazon (Printing)
- Gentex (High Technology Electronics)
- Harley Davidson (Paint Booths)
- Texas Instrument (Electronics/Microchip Fabrication)

and much more rely on Nortec's HP Series to provide pitch perfect humidification for their daily business needs.

Technical Data

SPECIFICATION	HP 100 (200 VFD)	HP 300 (500 VFD)	HP 500 (800 VFD)	HP 800 (1300 VFD)
Pump Capacity: lbs/hr (l/hr)	No VFD: 26 - 264 (12 - 120) With VFD: 11 - 440 (5 - 100)	No VFD: 79 - 700 (36 - 318) With VFD: 44 - 1100 (20 - 500)	No VFD: 92 - 1162 (42 - 528) With VFD: 88 - 1760 (40 - 800)	No VFD: 159 - 2086 (72 - 948) With VFD: 132 - 2860 (60 - 1300)
Nominal Output (480V/3/60Hz) kW	No VFD: 1.0 With VFD: 1.8	No VFD: 1.8 With VFD: 2.2	No VFD: 2.2 With VFD: 3.2	No VFD: 3.2 With VFD: 4.0
Rated Current Amps	1.5	1.9	3.7	5.3
Required humidifying section (Length)	Min. 4.2 ft. (1.3 m)			
Humidifying capacity	26 - 2860 lbs/hr (12 - 1300 kg/hr)			
Pump supply voltage	208, 400, 480, 600 VAC / 3 Phase / 50-60 Hz			
Pump operating pressure (Standard)	1015 Psi (70 bar)			
Inlet water pressure range	30 - 102 Psi (2 to 7 bar)			
Inlet water quality	Reverse Osmosis, De-ionized (5 - 30 µS/cm)			
Control signal connection	0-5 VDC, 1-5 VDC, 0-10 VDC, 2-10 VDC, 0-20 mA, 4-20 mA			
Relative humidity control accuracy	± 4% (7 Stage), ± 2% (15 Stage)			
Required air filter class upstream of humidifier	MERV 13			
Allowable air velocity	150 ft/min - 700 ft/min			

Options

Multi-zone Package	Allows up to 4 individually controlled humidifier grids to share a common pump.
Droplet Separator	Easy to install droplet filter contains water to a given evaporation distance and improves water efficiency through post evaporation.
Conductivity sensor	Continuously monitors incoming water quality by measuring conductivity and triggers alarm if water values are out of range. Provides peace of mind as well as enhanced operational safety.
Water meter	Integrated water meters display consumption. Ideal for building performance monitoring or claiming regional water and sewer tax credits.
UV Water Treatment	Factory installed ultraviolet lamp inhibits bacterial growth in the humidification water, enhancing hygienic operation and improving operational safety.
High Precision System	Additional valve staging allows for tighter tolerances and enables control accuracy of up to +/-2%.
Communication Gateway	Provides a factory installed communication gateway for integration of the humidifier into a building automation or SCADA system.
Integrated RO System	Provides a high performance reverse osmosis water treatment system integrated directly into the high pressure pump skid.
Water Softener	Self-regenerating ion exchange softener is ideal for systems with integrated RO systems. Removes hardness prior to RO system prolonging membrane life.
Carbon Filters	Activated carbon pre-filter removes free chlorine from supply water. Recommended for systems with integrated RO system when chlorine concentrations are above 0.05 - 0.1 mg/l.
Additional Hose	Provides additional high pressure hose for connections between pump and valve blocks.

As the leading manufacturer of commercial/industrial humidification systems for more than 40 years, Nortec has the technology and application expertise to meet the needs of any application.

Contact us today and ensure you have the best humidification and evaporative cooling solution for your application.

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