

Specification

High pressure nozzle system HPS
Adiabatic air humidification and cooling

Adiabatic modular high pressure nozzle system for energy-saving and hygienic humidification. Designed to maximise efficiency whilst minimising water and energy consumption by applying an infinitely variable and accurate control without post evaporation. This allows for the highest degree of precision.

Hygienically impeccable, certified and successfully providing continuous service around the clock. Utilised in areas such as hospitals and clean rooms.

Hygienic safety by

- using the tried and tested HygroMatik concept, guaranteeing safe and reliable hygiene
- utilising only inert materials
- omitting porous and water-storing components according to VDI 6022
- omitting recirculating water according to VDI 6022
- applying a design that prevents standing water according to VDI 6022
- utilising demineralized humidification water/residual conductivity 5-50 $\mu\text{S}/\text{cm}$
- omitting chemical and biological disinfectants

The HPS does not need hygiene-supporting chemicals in order to ensure a flawless operation. The HPS introduces pure humidity into the air. It is capable of humidifying standard systems and applications that require a very high degree of hygiene. This applies in particular to applications where adding supplements is not permitted.

The HPS hygiene concept includes the following certifications

- VDI 6022, Sheet 1 (2018-01)
- VDI 3803, Sheet 1 (2010-02)

The HPS has been employed successfully in clean rooms.

Atomising system

The HPS achieves optimum efficiency together with the Vortex turbulence modules.

The VortexWall is assembled from inert VortexModules, complete with high-pressure hoses and manifolds. The wall is suitable for all duct dimensions and is equipped with high-precision stainless steel atomising nozzles that are especially designed for this purpose. The nozzles are free from wear, easy to clean, and can be reused infinitely.

The various spray angles, combined with the efficient air/water mixture provided by the VortexModules, generate a humidified airflow across the entire area without creating condensation along the duct walls and ceiling. Thus, the HPS ensures a "dry humidification" along the shortest absorption distance.

According to VDI 6022 and VDI 3803, after the humidification unit, a stainless steel, one- or two-step aerosol separator is installed. The separator can be easily removed and cleaned; it can be reused infinitely and guarantees complete absence of aerosol.

High-pressure pump station

Low noise, reliable high-pressure piston pump for industrial application including a frequency converter, ready for the connection to demineralized water. The frequency converter provides proportional control across the entire humidification range.

Highest degree of safety ensured by providing

- motor output monitoring function
- additional mechanical protection to prevent excessive pressure
- monitoring minimum pressure and maximum pressure
- pressure increase depending on the demand
- leakage collection pan with level sensor
- 10 µm water filter

Optional

- 1-4 load operation – hygienic and efficient in all power ranges
- cooling system

Humidity control

Paring down resources, consistent proportional control including self-monitoring for permanent safety purposes.

The control unit with 3,5" touch display is intended for the activation of an on-site enthalpy regulation and is suitable for the connection to all common infinitely variable control signals.

- Modbus RTU with RS-485 interface

Hygiene rinsing according to VDI 6022 (forced discharge)

After the system has been shut down, all water-carrying lines of the humidification system will be subject to an automatic hygiene rinsing cycle. This option may be selected to start after 1 to 48 hours. The drainage interval and the intensity of the rinsing action are flexible and can be adjusted to meet the operation-specific parameters.

Proper hygienic installation and implementation

We will be happy to provide you with an individual offer for your project. Please contact us.

The following information should be observed / planning tips:

In order to comply with VDI 6022

- watertight duct segment with inspection door, light and cover for sight glass for inspection and service purposes
- properly mounted attachment components for VortexWall and aerosol separator
- all components coming in contact with water must be made of corrosion-resistant material, e.g. stainless steel (at least 1.4301)
- water basin with syphon

Highest degree of efficiency due to

- smooth surfaces and omission of protruding add-ons inside the humidification duct segments
- an absorption distance of 900 mm and an overall installation length of 1500 mm
- distance to the fan at least 1 m
- laminar incoming flow across the entire VortexWall

Technical data

Condition of air and installation dimensions

Overall dimensions height x width x length mm

Air throughput m³/h

Air velocity m/s

Pressure loss, overall system at 2.0 m/sec (dry) 80 Pa

Air inlet/..... °C/% RH

Air output/..... °C/% RH

Humidification required g/kg

Water requirement kg/h

Water quality Reverse osmosis water (5- 50 μS/cm)

Water temperature 5 to 15°C

Pump station

Max. delivery rate L/h

Rated pump motor output kW

Voltage/frequency V/Hz

Pump motor rated current A

Inlet water pressure on mains side 1 to 5 bar

Dimensions of pump station width x depth x height 782 x 399 x 734 mm

Model HygroMatik HPS