SKH4 - Atomizing High Pressure Humidifier Brochure

neptronic®

SKH4 Atomizing High Pressure Humidifier

High humidification at low power

The SKH4 pumps water at high pressure of 1,000 psi (70 bar) through a series of nozzles to produce a fine mist. The adiabatic evaporation used by the SKH4 takes energy (heat) from the surrounding air to evaporate the fine mist (water droplets). This evaporative cooling / humidification process provides large output capacities of 210-2,800 lb/h (100-1,250 kg/h), that can be modulated with a high turndown ratio of 20 lb/h (10 kg/h).

The power consumption is very low for the high load of humidification produced, compared with isothermal technologies or even other adiabatic technologies such as compressed air. The range of motor from 1/2 to 5HP (0.4 kW to 3.7 kW) is able to generate high cost savings on the humidification process and also on the cooling load of a space.

The SKH4's controller can be configured with either temperature control for a cooling application or humidity control for humidification. It allows you to temper industrial and commercial indoor areas where heat build-ups could be unfavourable to occupants, production, and material goods.

Advantages

- High turndown and cost-effective brass oil-lubricated pump.
- Low maintenance and hygienic stainless-steel water-lubricated pump
- Pump station capacity 210-2,800 lb/h (100-1,250 L/h)
- Cost effective on/off motor control
- Energy efficient VFD motor control
- Up to 6 stage valves
- Valves inside pump station or remote
- Up to 4 zones per pump station
- Integrated, Multi-Platform controller
- 6-10 lb/h (3-5 L/h) stainless steel anti-drip nozzle to spray water into fine 7-35- µm water droplets
- New in space fan-assisted mist distributors
- Custom-made nozzle rack to fit your duct or AHU dimensions

Applications

Industrial Space (assembly area)

Wood processing (paper and textile)

Food industry (storage of fruits and vegetables)

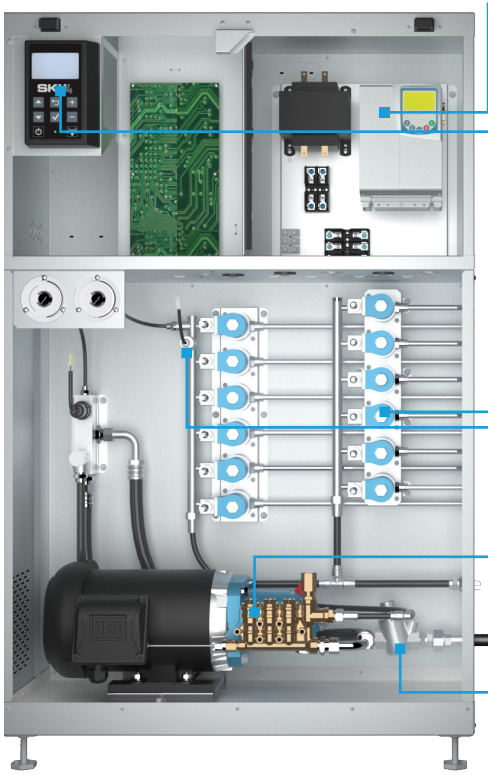
Outdoor space (terrace and pool area)

Data centres and electronics

Printing and photography industry

Pump unit detailed view

System Overview



Variable Frequency Drive :

Allows higher turndown ratio of the output and saves energy. (Optional)

SK Family controller:

Display and PCB from the SK Family, familiar menus and connections for control. Networkable (BACnet & Modbus)

Valves :

Up to 6 stages for a pump unit, configurable inside or outside of the pump for ease of installation of the distribution network

Pressure and temperature sensors :

Multiple sensors to monitor the humidification and detect pressures losses in the system or blockages.

High Pressure pump:

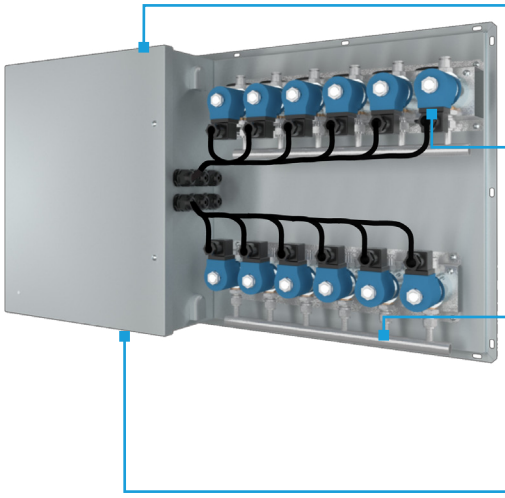
Economic brass pump or

Oil-free Stainless Steel pump

Pressure regulator and gauge:

Water inlet pressure regulator and gauge to adjust the appropriate water inlet pressure.

Brass	vs	Oil-Free Stainless Steel
More price competitive Higher turndown ratio without a drive.		Compatible with high purity water Longer maintenance intervals



Stainless Steel panel

Nema 4 Type panel in stainless steel to house control connections for valves and fan-assisted distributors.

Configurable number of valves for each application

Remote Valve Panel (RVP) can be configured with only drain valves, to be placed at the end of a long run network, avoiding the return piping distributors.

Distribution Manifold

Branch out the stages from the RVP to a far away zone to limit pressure losses created by multiple long runs from the pump unit.

Fan assisted control point

Dedicated connection point to control the activation of the fan-assisted distributors.

Control System

Integrated, Multi-Platform Controller

The SKH4 controller is configured specifically for your SKH4 — Atomizing High-Pressure Humidifier.

- User-friendly, menu-driven interface on a 128 x 64 LCD screen with eight function buttons for faster configuration and operation
- User rights management system allows for menu to display only functions available to the type of user logged in: End User, Service Technician, Installer or Integrator
- "Quick Config" menu allows for faster and easier installation by displaying only the most used functions and configurations
- Independent scheduling system for unit operation and drain cycle configurable via the menu or the BACnet communication interface
- In-field firmware can be upgraded via SD card, USB or BACnet
- Simple viewing and exporting of trending logs and alarm logs

BACnet
Modbus

SKH4 – Zone controller

- Zone controller provides pump unit with zone demand
- Up to 4 zones/pump unit
- In space/In duct humidification
- Configurable for all control types & protections:
  - On/off demand, analog demand
  - Temperature/humidity control
  - Temperature/humidity modulating high limit
  - Remote sensors
  - Air flow, high limit, interlock protection

SKH4 zone controller

Mist Distribution

MDU

Radial projection mist distributor uses an axial fan to help with absorption distances and homogeneity of the room air. Installed by suspension ropes from the ceiling, the MDU has a low footprint and helps cover a large area uniformly.

Advantages of the SKH4's MDU:

- High output
- High coverage
- Reduce absorption distance and improve air mix

The SKH4 MDU (Mist Distribution Unit) is a fan assisted distributor that will spread mist radially. It is ideal for large spaces with low ceilings (15-20ft / 4.5-6m).

Model #	Air Volume		Nozzles	Max. Capacity	
	CFM	m3/h	Qty	Lb/h	Kg/h
MDU-1000	1000	1700	6 to 9	40-100	18-45
MDU-2000	2000	3400	6 to 12	40-132	18-60

ADU

Axial projection mist distributor uses an axial fan to help with absorption distances and homogeneity of the air in the room. Installed on walls or beams, the ADU has multiple sizes to provide precise humidity distribution for every type of project.

Advantages of the SKH4's ADU:

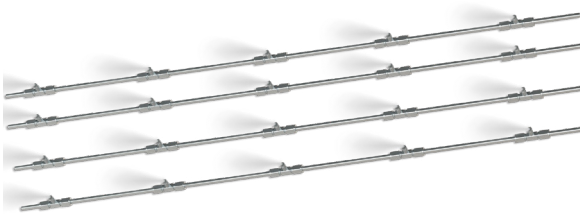
- Large range of output
- Localized and precise output
- Powerful front throw of cooled humid air

The SKH4 ADU (Axial Distribution Unit) is a fan assisted distributor that will spray mist in axial direction. It is ideal for large spaces with low ceilings (8-20ft / 2.4-6m).

Model #	Air Volume		Nozzles	Max. Capacity	
	CFM	m3/h	Qty	Lb/h	Kg/h
ADU-0200	200	340	1	6-11	3-5
ADU-1000	1000	1700	5	33-55	15-25
ADU-2000	2000	3400	8	53-88	24-40

Mist Distribution

In-Space Nozzle Rack



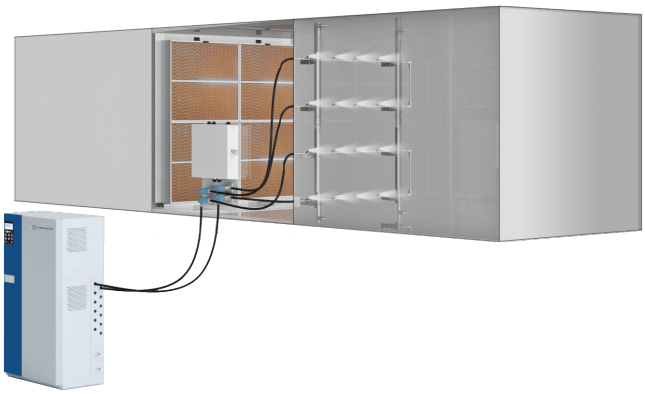
An array of nozzles on a high-pressure piping network creates a series of mist cones. The network then sprays mist in the space, starting from the pump unit or with the help of remote valve panel (RVP).

Advantages of In-Space Nozzle Rack:

- The SKH4 nozzles can be spread across large area, generally hanging from ceiling
- Multiple installation options to fit every space
- Cost effective solution ideal for large spaces with high ceilings (30ft / 9m)

In-Duct Nozzle Rack

Custom-made nozzle rack and droplet separator has been installed in the duct or AHU for precise output and mist absorption. Single pump unit can supply multiple ducts with or without remote valve panel (RVP).



Advantages of In-Duct Nozzle Rack:

- Up to 6 stage valves to ensure precise humidity output
- Spray contained in duct, no ceiling-height limitation

Nomenclature

SKH4	-	N	100	B	2-2	-	E	M
		Frequency N = 60Hz	**Capacity** 021 = 210 lb/h 050 = 500 lb/h 100 = 1000 lb/h 185 = 1850 lb/h 280 = 2800 lb/h	**Stage valve** B = Brass S = SS oil free	**Stage valve** 0-6		**Voltage** A = 120V / 1ph B = 208V / 1ph C = 220-240V / 1ph D = 208V / 3ph E = 220-240V / 3ph F = 400V / 3ph G = 480V / 3ph H = 600V / 3ph	**Motor control** Blank: On/Off M=VFD
		E = 50 Hz	010 = 100 L/h 022 = 220 L/h 045 = 450 L/h 085 = 850 L/h 125 = 1250 L/h		**Drain valve:** 0 - 6			

SKH4 with Brass Pump

Brass	(lb/h)	Model	N021B	N050B	N100B	N185B	N280B
		Maximum output	210	500	1000	1850	2800
		Minimum output – On/Off	52	125	250	462	700
		Minimum output – VFD	20	20	20	20	20

Brass	(L/h)	Model	E010B	E022B	E045B	E085B	E125B
		Maximum output – VFD	100	220	450	850	1250
		Minimum output – VFD	10	10	10	10	20
		Maximum output – On/Off (50Hz)	80	180	375	705	1040
		Minimum output – On/Off (50Hz)	20	45	94	176	260

SKH4 with oil-free Stainless Steel Pump

SS Oil-free	(lb/h)	Model	N062S	N140S	N225S	N280S
		Maximum output – VFD	625	1400	2250	2800
		Minimum output – VFD	62	140	225	280

SS Oil-free	(L/h)	Model	E028S	E060S	E100S	E125S
		Maximum output – VFD	280	600	1000	1250
		Minimum output – VFD	28	60	100	125

Humidifier Product Line

SKE4

Electric

- Capacities from 6 - 300 lb/hr
- Remove chamber easily, without tools
- Outdoor unit available

SKG4

Gas Fired

- Capacities from 110 - 810 lb/hr
- Modular design
- Outdoor unit available

SKS4

Steam to Steam

- Capacities from 17 - 1250 lb/hr
- Scale management system for easy maintenance
- Insulated external panels

SKVF

Evaporative Cooler

- Airflow up to 6000 CFM
- ECM fan with variable output
- Compact, quiet and standalone

SKR

Residential

- Capacities from 4.5 - 12 lb/hr
- Permanent cleanable chamber
- Reliable siphon drain

SKH4

High Pressure Atomizer

- Capacities up to 2800 lb/hr
- Up to 4 zones
- Installation in-duct or in-space

SKV

Evaporative

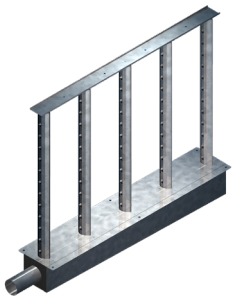
- Free cooling up to 22°F (12°C)
- Custom design to fit your application
- Hygienic operation with silver ion dosing system

SKD

Direct Steam

- Capacities from 5 - 1650 lb/hr
- Jacketed or Multi-Steam™ SD/HD
- Unique electronic steam controller
- Optional pressurized condensate return (PCR) system

Distribution



Steam Distribution

- Multi-Steam™ SD/HD distribution
- S.A.M. & S.A.M.E2 wands
- SDU (Space distribution unit)

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