

Humidifier Product Catalogue



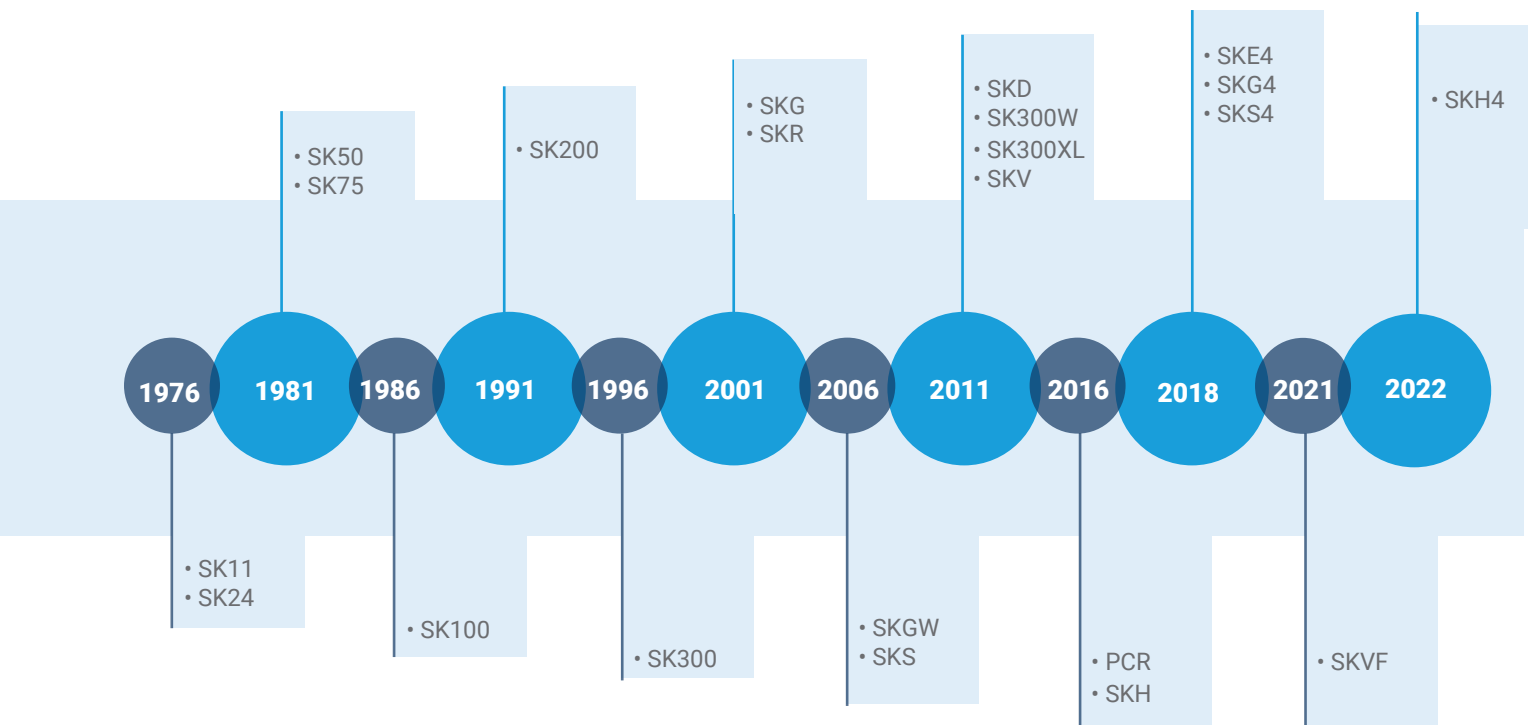
neptronic®

Overview

Since 1976, Neptronic has been committed to advancing our products by utilizing all that technology has to offer. Our commitment to quality is the foundation of every stage in our process. We build from the ground up, beginning with a thorough exploration of the most current ideas, and deliver a product that's engineered to perform. Neptronic's focus on integration across the board means that we can deliver a system suited to your exact needs.

The importance of humidification in our daily lives cannot be understated. Humidification is an essential component in maintaining ideal climate conditions for a variety of applications: the production of sensitive electronics that require environments completely free of dust and particulates; careful control of sterile conditions in a hospital's surgical suites; preservation of priceless manuscripts and artworks in museums, or your personal comfort at home and in the office. Neptronic's complete humidifier series with integrated controllers equipped with BACnet or Modbus will fulfill whatever your situation requires.

Demand the best. We do.



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 3000lb/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

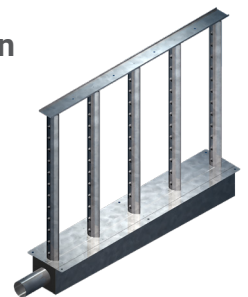
SKD 🌫️



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)

RESISTIVE ELECTRIC STEAM HUMIDIFIER

The resistive heating elements of the SKE4 convert electrical energy to heat energy that is then transmitted to the surrounding water, raising the temperature to its boiling point, creating steam. The process allows mineral-free, odorless, sterile steam to be generated quickly with any water condition.



SKE4 Advantages

- Capacities from 6-300 lb/hr (2.7-136 kg/hr)
- Separate plumbing, controls, and high-voltage sections
- Remove the stainless steel evaporation chamber with ease
- Patent-pending water level detection system using 2 sensor technologies
- Drain water tempered to below 140°F (60°C)
- Patented Anti-Foaming Energy Conservation (AFEC) System
- Available with BACnet MS/TP or Modbus communication interface
- Optional ethernet module for BACnet IP or Modbus IP, and Web services
- Independent scheduling system for unit operation and drain cycle

System Overview

Patent-Pending Water Level Detection System

- Self-cleaning and self-calibrating sensors
- Utilizes 2 different sensor technologies
- Precise and reliable water level detection
- Anti-Foaming Energy Conservation (AFEC) System: drains water when foam is detected

*All Silicone Piping

- No copper piping
- Resistant to higher water temperatures
- Suitable for all water types including DI and RO (Consult factory for Ultrapure water)

* Alternate piping available

Manual Drain

- Functions even without power

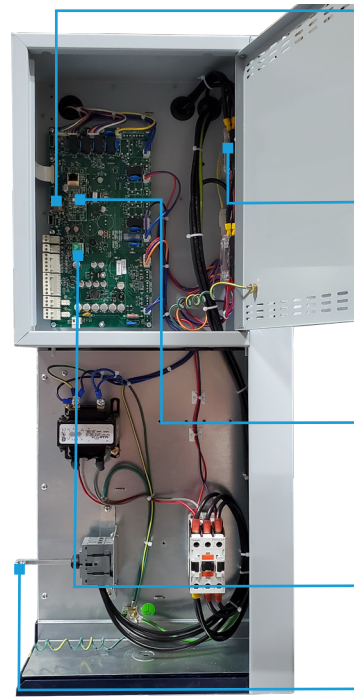


Power drain pump

Quick Connect Water Inlet

- No tools required

neptronic.com



SD Card

- Event history log
- Firmware upgrade

SSR with External Heat Sink

- No cooling fan required
- Reduces noise level

Ethernet Module (optional)

- BACnet IP or Modbus IP
- Local and remote web services

BACnet MS/TP and Modbus Module (optional)

Disconnect switch

Specifications

Fast and Easy Maintenance



No tools required



No heavy lifting required

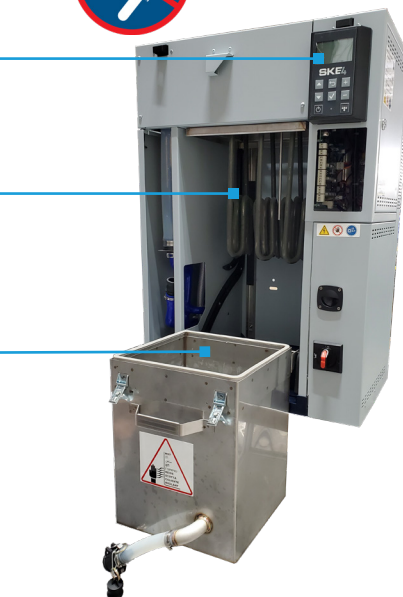
Advanced controller with multiple connectivity options
(see page 7)

Heating elements remain fixed within the enclosure

- No need to disconnect power cables
- No added weight from the elements when removing the evaporation chamber

Drop-down design limits lifting and simplifies handling

Evaporation chamber rests securely for easy maintenance



In-Duct Distribution

For Multi-Steam™ SD/HD and SAM in-duct distribution systems, refer to page 17.



SDU (Space Distribution Unit)

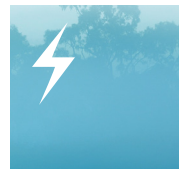
- Quiet operation
- No condensation
- Local or remote in-room steam distribution
- 3 models available (SDU4-1, SDU4-2, and SDU4-3)



Outdoor unit

- Fully insulated and constructed from heavy-duty steel
- Stainless steel bottom drip pan
- Zinc primer and polyurethane powder coating for resistance against scratches and corrosion on the exterior and interior surfaces
- Built-in anti-freeze and overheat protection
- Easy installation on a roof curb, stand or slab
- Connection can be made from side or bottom of unit for flexibility in any configuration

For Models SKE4-N02 to SKE4-N30



Output and Consumption

Model	Steam	Consumption									Steam Output		
	Capacity lb/hr [kg/hr]	Power (kW)	Amperage								Qty	Diameter inches [mm]	Space Distribution Unit (SDU)
			120/1	240/1	208/1	208/3	480/1	480/3	600/1	600/3			
SKE4-N02	6 [2.7]	2	17	8.5	10	-	4.5	-	3.5	-	1	1 3/8 [35]	SDU4-1
SKE4-N04	12 [5.5]	4	-	17	19	11.5	8.5	5	7	4	1	1 3/8 [35]	SDU4-1
SKE4-N06	18 [8]	6	-	26	30	16.5	13	7.2	10.5	6	1	1 3/8 [35]	SDU4-1
SKE4-N10	30 [14]	10	-	-	-	28	-	12	-	10	1	1 3/8 [35]	SDU4-2
SKE4-N14	40 [19]	13.5	-	-	-	38	-	16.5	-	13.5	1	1 3/8 [35]	SDU4-2
SKE4-N16	48 [21.8]	16	-	-	-	45	-	-	-	16	1	2 [51]	SDU4-3
SKE4-N20	60 [28]	20	-	-	-	-	-	25	-	20	1	2 [51]	SDU4-3
SKE4-N30	90 [41]	30	-	-	-	-	-	36	-	30	1	2 [51]	SDU4-3
SKE4-N20 L	60 [28]	20	-	-	-	56	-	-	-	-	1	3 [76]	-
SKE4-N40	120 [56]	40	-	-	-	-	-	50	-	40	1	3 [76]	-
SKE4-N50	150 [68]	50	-	-	-	-	-	60	-	50	1	3 [76]	-
SKE4-N60	180 [82]	60	-	-	-	-	-	72	-	60	1	3 [76]	-
SKE4-N30X	90 [41]	30	-	-	-	83.4	-	-	-	-	1	3 [76]	-
SKE4-N40X	120 [56]	40	-	-	-	111	-	-	-	-	1	3 [76]	-
SKE4-N70	210 [95]	70	-	-	-	-	-	84	-	70	1	3 [76]	-
SKE4-N80	240 [108]	80	-	-	-	-	-	96	-	81	2	3 [76]	-
SKE4-N90	270 [122]	90	-	-	-	-	-	109	-	91	2	3 [76]	-
SKE4-N100	300 [136]	100	-	-	-	-	-	120	-	96	2	3 [76]	-



SKE4-N02
SKE4-N04
SKE4-N06



SKE4-N10 SKE4-N20
SKE4-N14 SKE4-N30
SKE4-N16



SKE4-N20L
SKE4-N40
SKE4-N50
SKE4-N60



SKE4-N30X SKE4-N80
SKE4-N40X SKE4-N90
SKE4-N70 SKE4-N100

Integrated, Multi-Platform Controller

The SK Controller is configured specifically for your SKE4, SKG4, SKS4, or SKV4 unit.

- User-friendly interface consisting of a menu driven 128 x 64 LCD with 8 function buttons for faster configuration and operation
- User rights management allows for menu to display only functions available to the category of user logged in
- Quick Config menu allows for faster and easier installation, by displaying only the most commonly 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 upgradeable via SD card, USB or BACnet
- Simple viewing and exporting of trending log and alarm log



One controller, one menu across humidifier types provides consistency and ease of use.



SKE4
ELECTRIC



SKG4
GAS FIRED



SKS4
STEAM TO STEAM



SKH4
ATOMIZING HIGH
PRESSURE

Optional Features:

- The selectable BACnet MS/TP or Modbus communication interface allows access to over 75 objects/registers for integration with a BMS and IoT (Internet of Things)
- Ethernet Module
 - o BACnet IP or Modbus IP
 - o Web services make it possible to perform humidifier configurations, remote diagnostics and many more functions from any location



RESIDENTIAL HUMIDIFIER

Humidifying your home with a Neptronic SKR residential steam humidifier protects you from winter ailments. It reduces dry skin, sinus problems and scratchy throats by creating a healthier, more comfortable living environment. Proper humidity levels also protect valuables from permanent damage.



SKR Advantages

- Steam capacity from 4.5 to 12 lbs/hr (2 to 5.4 kg/hr)
- Permanent cleanable stainless steel evaporation chamber
- Patented siphon drain requires no drain valve or external tap
- Environment friendly – no plastic cylinders to replace
- On/Off operation, modulation optional
- Drain water tempered to below 140°F (60°C)
- Self-cleaning heating elements

System Overview

Intelligent Controller

- Manages control sequences and performs self diagnostics
- On/Off or modulating control functions
- LED status display

Evaporation Chamber

Permanent, easily serviceable, stainless steel chamber. No need to replace expensive plastic bottles.

Heating Element

Self-cleaning, electric heater elements.

Internal Plumbing Assembly

High Voltage Quick Connect

Safe, fast and easy connection and reconnection of line voltage.

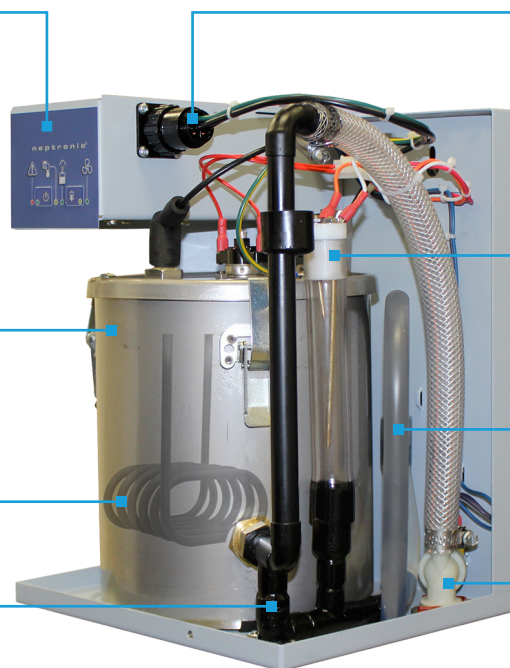
Water Level Sensors

Conductive water level sensors for normal operation level and drain level.

Patented Siphon Drain

Eliminates the use of a physical device such as a drain valve or external P trap to drain water.

Water Fill Valve



Specifications

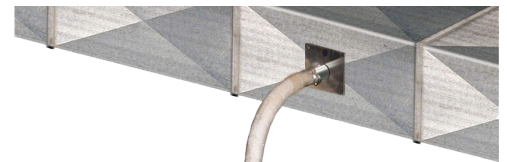
Output and Consumption

Model	Capacity	Power (kW)	Amperage			Width	Height	Depth	Height with SDU
			120V	208V	240V				
SKR14	4.5 lb/hr 2.0 kg/hr	1.4	12A	-	-	10.5" 267mm	14.5" 368mm	9" 229mm	19.75" 500mm
SKR25	7.5 lb/hr 3.4 kg/hr	2.5	-	12A	11A	10.5" 267mm	14.5" 368mm	9" 229mm	19.75" 500mm
SKR30	9 lb/hr 4.1 kg/hr	3	-	14.5A	13A	10.5" 267mm	14.5" 368mm	9" 229mm	19.75" 500mm
SKR40	12 lb/hr 5.4 kg/hr	4	-	19.2A	17A	10.5" 267mm	14.5" 368mm	9" 229mm	19.75" 500mm

Note: Operation with maximum 0.5" (125Pa) duct static pressure at steam distribution manifold location.

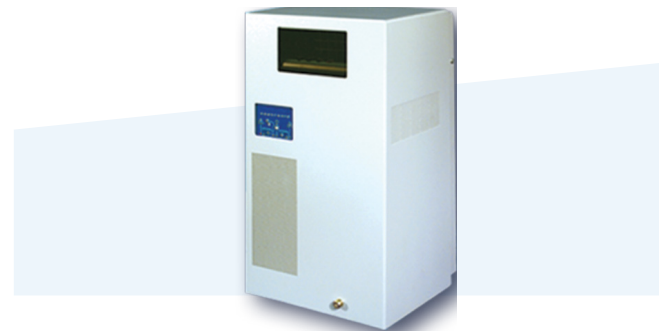
In-duct distribution

For a duct distribution installation, the SKR requires a SAM Steam Distribution System (see page 17).



Integrated SDU (Space Distribution Unit)

This option is typically used in small stores, small warehouses and laboratories where the visibility of the unit is not an issue.



Remote SDU (Space Distribution Unit)

Ideal for condos/apartments without a duct network, the remote SDU is designed for through-the-wall installation to provide humidification directly into the room.

Features

- Distribution unit is installed through a wall partition
- SKR humidifier is installed in a closet or other closed location
- Modern design of SDU front grill blends into any decor
- Low noise (less than 40dBa at 1m)
- Standard, 120Vac power supply



SKG4 gas fired

GAS FIRED HUMIDIFIER

The SKG4 gas fired humidifier generates mineral free, odorless, sterile steam by using the power of natural gas or propane. Cost of operation and its carbon footprint is much lower than electric humidifiers with equivalent control accuracy.

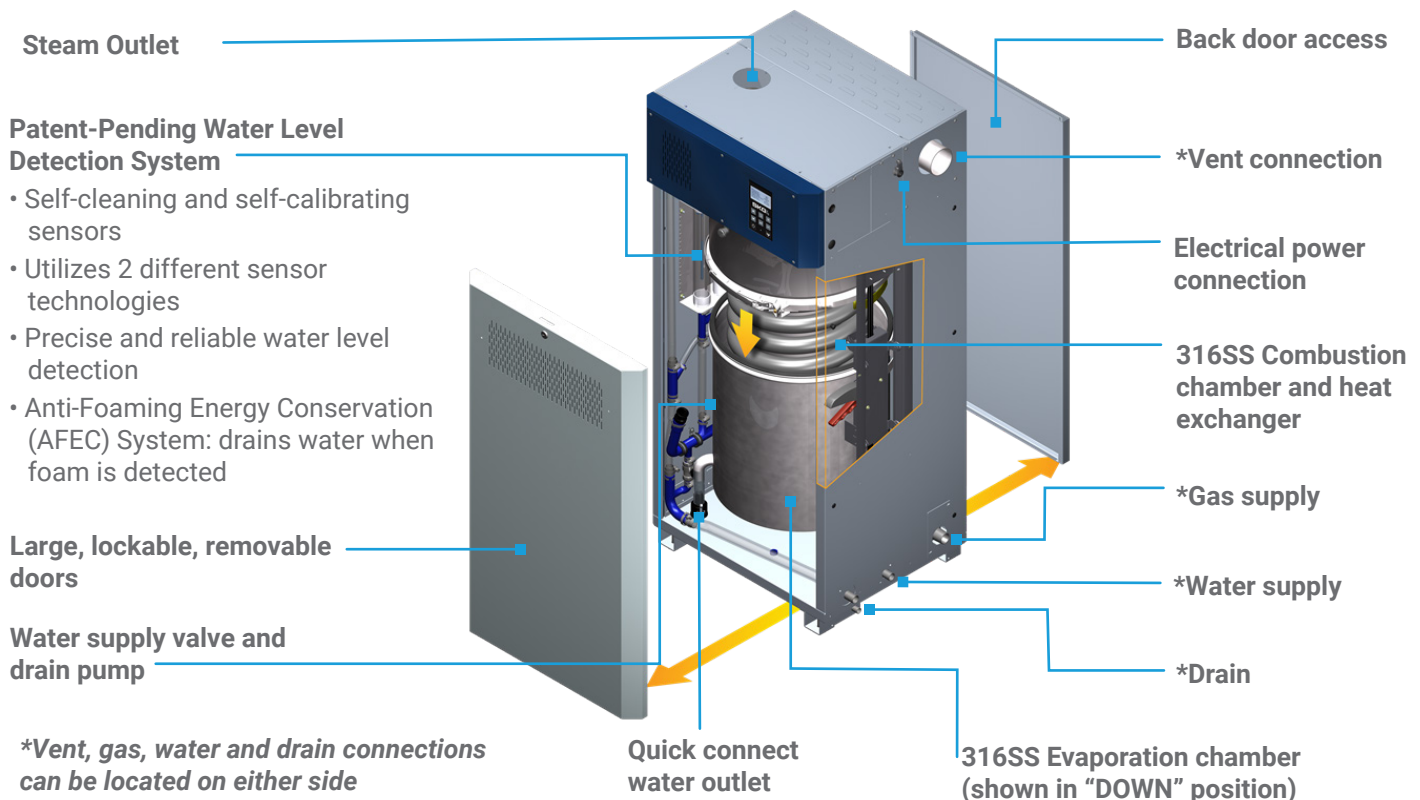


SKG4 Advantages

- Steam capacity from 110 to 810 lbs/hr (50 to 370 kg/hr)
- Maximum turndown of 16:1
- Functions with Tap, RO or DI water
- Combustion efficiency: 83% to 87%
- For Multi-Steam and SAM in-duct distribution systems, refer to page 17
- Easy servicing: clean and re-install within minutes
- Smallest footprint in the industry
- Patented Anti-Foaming Energy Conservation (AFEC) System
- Advanced controller with multiple connectivity options (see page 7)
- Waste water drained below 140°F (60°C)
- Self-adjusting burner for altitude compensation



System Overview



Specifications

Output and Consumption

Model	No. of Modules	Steam Capacity (lb/hr) [kg/hr]	Input Capacity (btu/hr) [kW]	Current at 120Vac (A)	Current at 208Vac (A)	Current at 240Vac (A)	No. of Outlets	Multi-Steam header diam. in [mm]
SKG4-N1101 N/P	1	110 [50]	165,000 [49]	6.0	3.5	3.0	1	3" [76]
SKG4-N1551 N/P	1	155 [70]	215,000 [63]	6.0	3.5	3.0	1	3" [76]
SKG4-N1801 N/P	1	180 [80]	240,000 [70]	6.0	3.5	3.0	1	3" [76]
SKG4-N2101 N/P	1	210 [95]	249,000 [73]	6.0	3.5	3.0	1	3" [76]
SKG4-N2652 N/P	2	265 [120]	380,000 [112]	9.0	5.2	4.5	2	4" [100]
SKG4-N3102 N/P	2	310 [140]	430,000 [126]	9.0	5.2	4.5	2	4" [100]
SKG4-N3502 N/P	2	350 [160]	464,000 [136]	9.0	5.2	4.5	2	4" [100]
SKG4-N4052 N/P	2	405 [185]	498,000 [146]	9.0	5.2	4.5	2	4" [100]
SKG4-N5053 N/P	3	505 [230]	704,000 [206]	12.0	7.0	6.0	3	5" [125]
SKG4-N5603 N/P	3	560 [255]	713,000 [209]	12.0	7.0	6.0	3	5" [125]
SKG4-N6103 N/P	3	610 [275]	747,000 [219]	12.0	7.0	6.0	3	5" [125]
SKG4-N7104 N/P	4	710 [320]	953,000 [279]	15.0	8.7	7.5	4	(2x) 4" [100]
SKG4-N7654 N/P	4	765 [345]	962,000 [282]	15.0	8.7	7.5	4	(2x) 4" [100]
SKG4-N8104 N/P	4	810 [370]	996,000 [292]	15.0	8.7	7.5	4	(2x) 4" [100]

Outdoor Unit

- Hinged doors provide full access (serviceability) from the front, back and top of unit
- Fully insulated and constructed from heavy duty steel
- Stainless steel bottom drip pan
- Zinc primer and polyurethane powder coating for resistance against scratches and corrosion
- Built-in anti-freeze and overheat protection
- Easy installation on a roof curb, stand or slab
- Connection can be made from side or through the roof curb



Modular Design

Flexible Solution for Indoor/Outdoor Applications

Modular design offers flexibility and convenience; each module adds up to 210 lbs/hr (100 kg/hr) of steam capacity. With the smallest footprint in the industry, the SKG4 module can be easily installed and assembled on site when access is limited. Module assembly can be arranged in line, in an L shape, or back to back to accommodate any specific space conditions. Feed water, gas, water drain and flue connections can be located on either side of the enclosure.



SKS4 steam to steam

STEAM TO STEAM HUMIDIFIER

The SKS4 humidifier provides chemical free steam by using an on-site central boiler or steam generating station as a heat source. The raw steam under pressure from the boiler provides the energy to produce clean steam through a heat exchanger.

SKS4 Advantages

- Capacities from 17 to 1250 lbs/hr (8 to 570 kg/hr) of steam
- Stainless steel (for raw steam) heat exchangers
- Comprehensive scale management system
- Ease of servicing: clean and re-install within minutes
- Patent-pending water level detection system using 2 sensor technologies
- Uses either domestic, RO or DI water
- For Multi-Steam and SAM in-duct distribution systems, refer to page 17
- Available with BACnet MS/TP or Modbus communication
- Optional ethernet module for BACnet IP or Modbus IP, and web services
- Patented Anti-Foaming Energy Conservation (AFEC) System
- Drain water tempered to below 140°F (60°C)

System Overview

Heat Exchanger

Raw steam passes through the heat exchanger, thus providing the energy to produce clean steam. Made with 316 stainless steel for 5 - 15 psig steam.

Evaporation Chamber

The 304 stainless steel evaporation chamber is equipped with handles for easy removal without any tools.

Steam Outlet

Insulated Cabinet

The fully enclosed steel, powder-painted cabinet with 1" (25mm) thick insulation eliminates accidental contact with hot surfaces and saves energy.

Scale Trap Trays

These trays can be accessed from the top of the unit, allowing for easy maintenance and scale removal.

Floor Stand

Adjustable legs ensure proper level when installed directly on the floor.

Built-in Controller

- Intuitive menu-driven user interface
- User rights management
- Quick config menu
- Multiple connectivity options
- See page 7 for more details



Patent-Pending Water Level Detection System

- Self-cleaning and self-calibrating sensors
- Utilizes 2 different sensor technologies
- Precise and reliable water level detection
- Anti-Foaming Energy Conservation (AFEC) System: drains water when foam is detected

Pressurized Steam Supply

Disconnect Switch

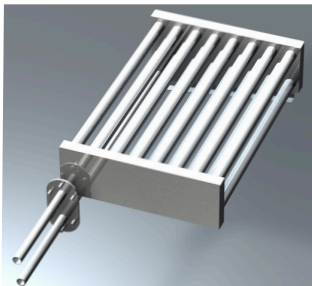
Condensate Return

Outdoor unit available



Specifications

Heat Exchanger - SLP Stainless Steel 316 (For Raw Steam)

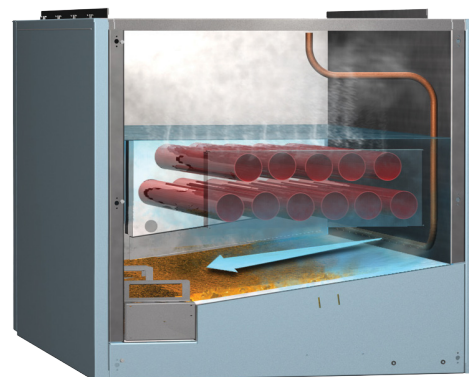


Model	Output Steam Capacity lbs/hr [kg/hr] for Supply Steam Pressure					Steam Outlet Qty & Ø in [mm]
	5 PSI [34.5 kPa] [34.5 kPa]	8 PSI [55.1 kPa]	10 PSI [68.9 kPa]	12 PSI [82.7 kPa]	15 PSI [103 kPa]	
SKS4-050-SLP	17 [8]	27 [12]	33 [15]	40 [18]	50 [23]	(1x) 2" [51]
SKS4-100-SLP	33 [15]	53 [24]	67 [30]	80 [36]	100 [45]	(1x) 3" [76]
SKS4-130-SLP	43 [19]	69 [31]	87 [39]	104 [47]	130 [59]	(1x) 3" [76]
SKS4-190-SLP	63 [28]	101 [46]	127 [57]	152 [69]	190 [86]	(1x) 3" [76]
SKS4-290-SLP	97 [44]	155 [70]	193 [87]	232 [105]	290 [132]	(1x) 4" [100]
SKS4-390-SLP	130 [59]	208 [94]	260 [118]	312 [142]	390 [177]	(1x) 4" [100]
SKS4-500-SLP	167 [76]	267 [121]	333 [151]	400 [182]	500 [230]	(1x) 5" [125]
SKS4-690-SLP	230 [104]	368 [167]	460 [209]	552 [251]	690 [314]	(1x) 5" [125]
SKS4-950-SLP	317 [144]	507 [230]	633 [287]	760 [345]	950 [432]	(2x) 4" [100]
SKS4-1250-SLP	417 [189]	667 [303]	833 [378]	1000 [454]	1250 [568]	(2x) 5" [125]

Self-Cleaning System

Scale Management System

The SKS4 is designed with a comprehensive scale management system. The supply of cold water, located at the sloped bottom of the evaporation chamber, forces the precipitated mineral deposits into baskets that can easily be removed.



Modulating Control

The SKS4 is supplied with a Neptronic linear actuated globe valve, giving full modulation control of low pressure steam. The globe valve is available with either brass or stainless steel trim as an option.



DIRECT STEAM INJECTION HUMIDIFIER

The SKD direct steam injection system uses low pressure steam from an in-house boiler (maximum pressure 1 bar/15PSI) to humidify the air.

SKD Advantages

- Custom designed to meet your specific steam capacity and non-wetting distance requirements
- 5 steam distribution configurations: Multi-Steam™ SD, Multi-Steam™ HD, or Jacketed (Single Tube, Multi-Tube, or Mini Rack)
- Unique Electronic Steam Controller (ESC) manages the sequence of operation to optimize energy efficiency and prevent condensate ejection
- Optional patent-pending pressurized condensate return (PCR) system. No gravity drain - no maintenance - returns condensate to steam source

System Overview

Steam Separator

Supplies condensate-free steam to the steam control valve, while discharging condensate to the steam trap.

Temperature Sensor

Monitors steam temperature and detects abnormal condensate level to ensure safe operation.

F&T Steam Trap

Eliminates condensate from the steam line.

Steam Control Valve

Provides full modulation of the low pressure steam flow for a better control of the humidity level.

Steam Distribution System Multi-Steam Configuration

- Multi-Steam™ SD
- Multi-Steam™ HD

Jacketed Tube Configuration

- Single Tube
- Multi Tube
- Mini Rack

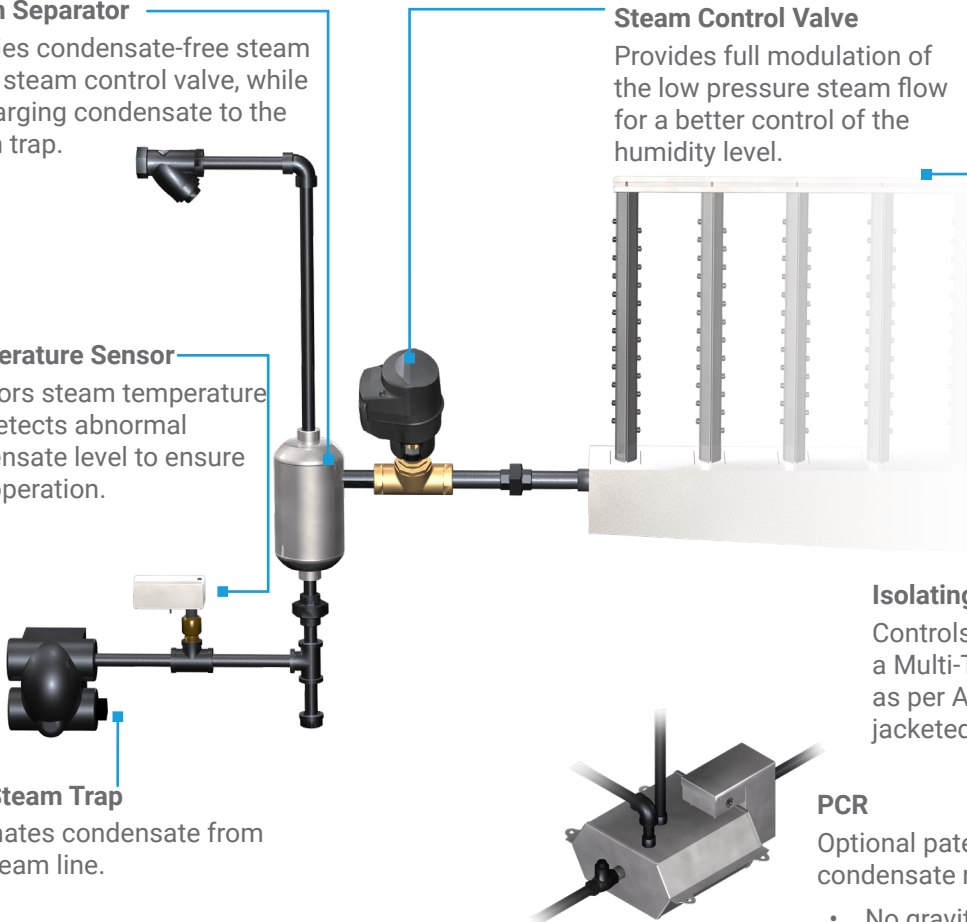
Isolating Valve

Controls steam supply to the jacket in a Multi-Tube configuration (mandatory as per ASHRAE standard 90.1 for all jacketed tube configurations).

PCR

Optional patent-pending pressurized condensate return (PCR) system.

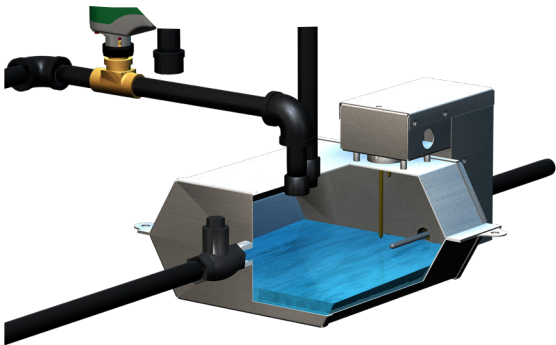
- No gravity drain
- No maintenance
- Returns condensate to steam source



PCR

Pressurized Condensate Return system

The Neptronic Pressurized Condensate Return system (PCR) returns condensate generated within the steam dispersion tubes of a direct steam humidifier back to the steam source, thus eliminating the need for a gravity drain. Presently, the only other available technology is a pressurized steam humidifier with a heat exchanger (or re-evaporator).



Description	Neptronic PCR System (Pressurized Condensate Return)	Competitors Re-evaporators (Internal Heat Exchanger)
Real-time monitoring	Yes	No
BMS Integration	BACnet or Modbus	No
Maintenance	Not required	Systematic verification is a must*
Cleaning	Not required	De-scaling*
Downtime	None	During maintenance or when equipment is offline due to fouling*
Flooding of header	None	Possible due to reduced capacity due to fouling and standard piping configuration
Accessibility	Outside the duct for easy access	Standard cleaning procedure requires access to the top of header often located in duct (may require duct access by door)*
Compatibility	Insulated and non-insulated steam distributors and headers	Only insulated steam distributors and headers
Installation	Lowest clearance with simple and flexible installation due to smaller components	Higher clearance and integral design forces components below duct, resulting in potential ceiling clearance issues

*See manufacturer’s manual for more information

ESC Controller

Unique in the Industry

- Centralized wiring of sensors, valves and humidity controls
- Easy start-up and diagnostics
- Factory pre-configured operating temperature range
- 24 Vac operation
- BACnet or Modbus compatible

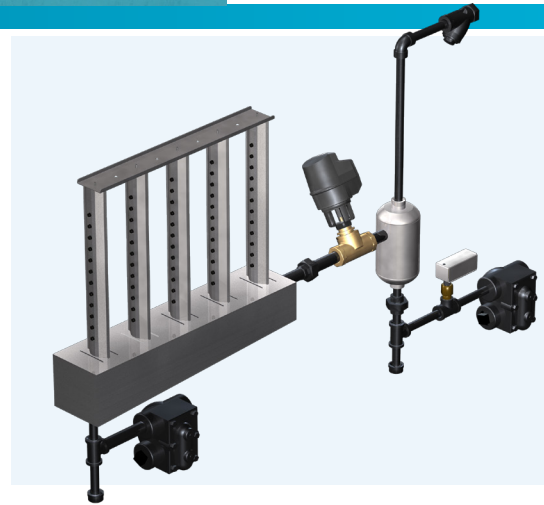


Multi-Steam™ SD (Non-insulated)

- Lowest capital cost injection system
- Easiest installation... contractor's favorite
- Header with built-in slope for improved condensate elimination

Multi-Steam™ HD (Insulated)

- Same as Multi-Steam™ SD plus: X-Stream™ Technology (see page 17)
- Lowest heat transferred to the airstream
- Lowest condensate produced



JACKETED

Single Tube

- For duct installations
- Low capacity applications: 5 - 170 lb/h (2 - 77 kg/h)
- Average non-wetting distance

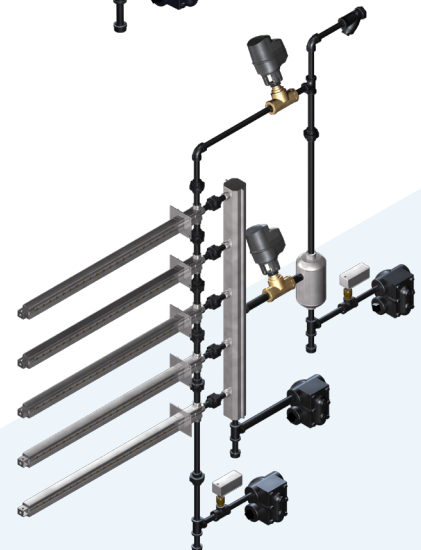
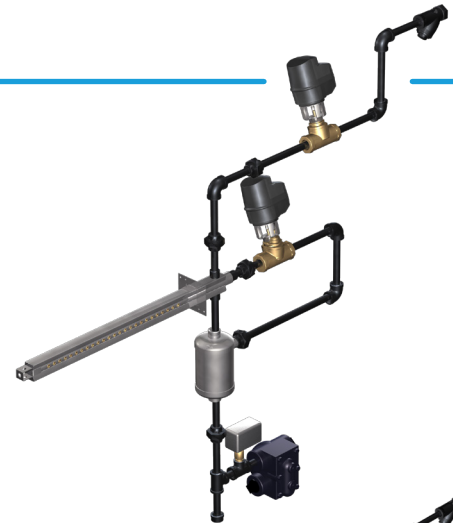
Multi-Tube

- For duct or AHU installations
- Medium to high capacity applications: 5 - 1650 lb/h (2 - 750 kg/h)
- Short non-wetting distances
- Optional pressurized condensate return (PCR) system

Mini Rack

Same as Multi-Tube, plus:

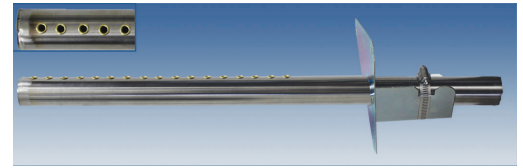
- Designed for limited space installations such as reduced duct height
- Tubes pre-assembled on header



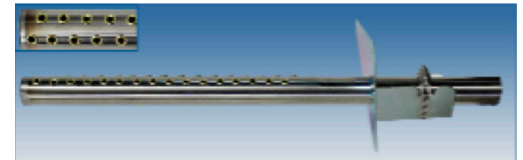
steam distribution types

S.A.M.

- Short absorption distance (less than 5ft/1500mm)
- Stainless steel tube with brass nozzles
- Nozzles prevent condensate from collecting in the duct
- Inclined steam dispersion tube to return condensate back to humidifier or steam trap



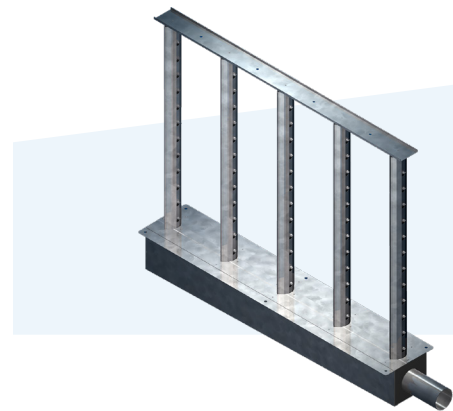
S.A.M.



S.A.M.E2

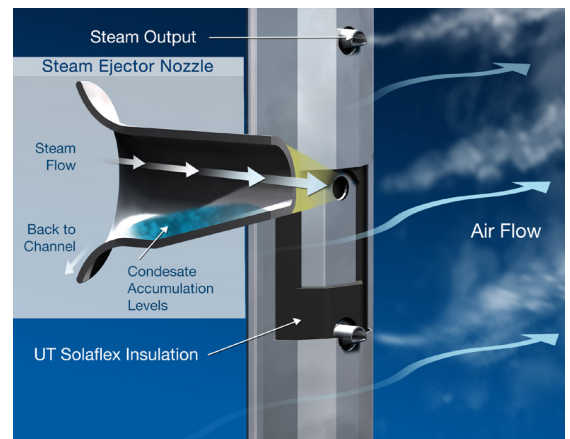
Multi-Steam™ SD (Non-Insulated)/HD (Insulated)

- For absorption distances of less than 3ft (900mm)
- Custom built for the duct or AHU
- Header with built-in slope for improved condensate elimination
- Brass insertion nozzles (SD), or 304 stainless steel eyelets (HD)
- Completely assembled (HD) or welded (SD) at the factory, or collapsible for in-field assembly



X-Stream™ Technology (HD Insulated)

- High efficiency insulated steam distributor (channel and header) with steam ejector eyelets
- Double wall 304 stainless steel with encapsulated Armacell
- UT/Solaflex™ foam insulation
- Specially engineered 304 stainless steel eyelets prevent condensate ejection on start up and any modulating humidity demand



Steam Distribution Applications

Steam Distribution System	SKR ⚡	SKE4 ⚡	SKG4 🔥	SKS4 ↑↑↑	SKD ~~~
Multi-Steam™ SD		•	•	•	•
Multi-Steam™ HD		•	•	•	•
S.A.M.	•	•			
S.A.M.E2	•	•	•	•	



SKVF evaporative cooler

EVAPORATIVE COOLER

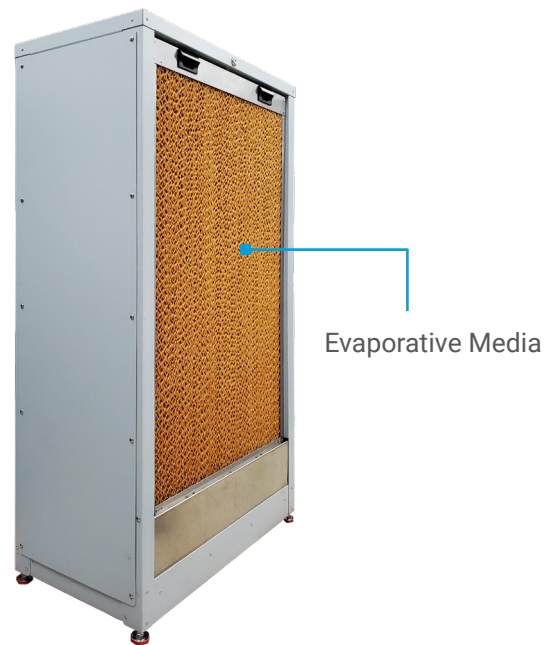
The SKVF evaporative cooler provides maximal comfort in industrial and commercial applications. It can be easily configured either to cool or humidify with its energy-efficient ECM fan and user-friendly interface to prevent unwanted heat build-ups.



SKVF Advantages

- ECM fan with variable output (10-100%)
- Compact, quiet and standalone evaporative cooler
- Free cooling up to 21.5°F (12°C)
- Very low energy consumption (< 1.5kW)
- Hygienic and environmentally friendly operation
- Very low and easy maintenance with removable panels
- Configurable for minimal water usage
- Configurable fan operation for continuous ventilation or media drying

System Overview



Nomenclature

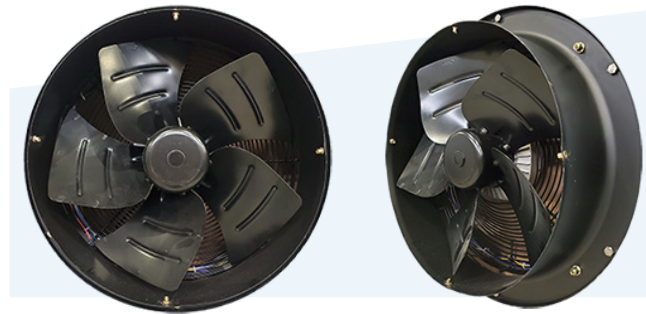
SKVF	-	R	60	-	85	B	C	S
		Type	CFM		Evaporation Factor	Fan Position	Voltage	Control Panel
		R = Recirculation D = Direct Feed	15 = 1500 CFM 30 = 3000 CFM 60 = 6000 CFM		85 = 85%	B = Back	A = 120Vac/1ph B = 208Vac/1ph C = 230-240Vac/1ph	S = Standard

Specifications

ECM Fan

Advantages of the SKVF's ECM fan:

- High energy efficiency – up to 30% more efficient than AC fans
- Integrated continuous control for the fan speed, torque and feedback signal
- Low operating temperatures increase the fan's reliability and longevity
- Relatively compact and versatile at high capacity

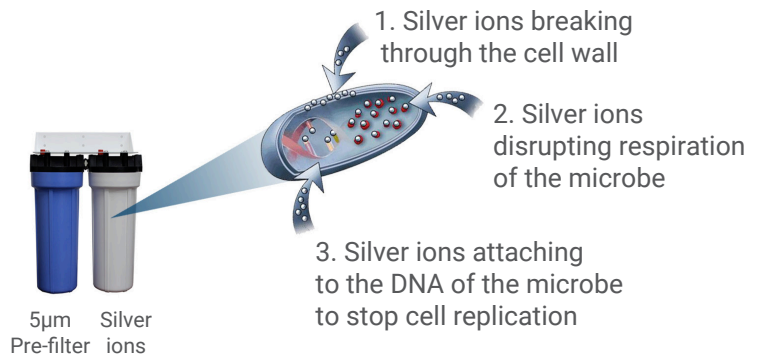


Water Quality

Hygienic operation with tap or RO water

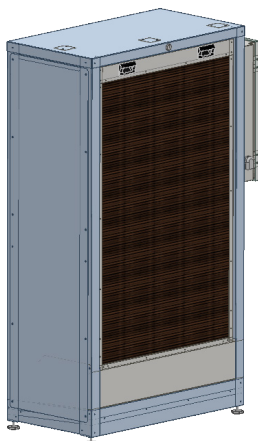
- Odor free media
- Water treated with 5µm pre-filter
- Anti-bacterial silver ion dosing cartridges prevent microbial growth
- UV sterilizer on water line (optional)
- Evaporative media fan drying sequence
- Normally open (NO) drain valve protection in case of power failure

How Silver Ions Work

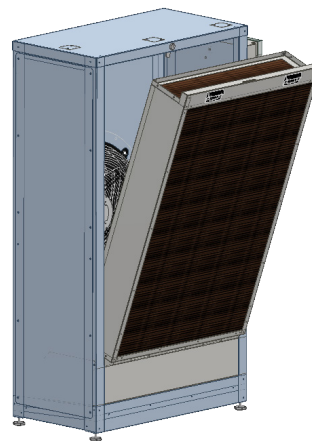


Easy Maintenance

The SKVF has been designed to facilitate access to the evaporative module components for easier maintenance. Remove the media cassette in two easy steps:



1. Use the access key to unlock the media cassette panel



2. Remove the media cassette from the SKVF



EVAPORATIVE HUMIDIFIER

With the SKV evaporative humidifier, water is supplied to the top of the evaporative module and flows down the wet media. Warm dry air passes through the wet media evaporating the water, thereby raising the humidity level.



SKV Advantages

- Very low machine energy consumption (<1kW)
- Hygienic operation
- Environmentally friendly
- Very low maintenance
- Free cooling up to 21.5°F (12°C)
- Custom modular design to fit any application
- Low pressure drop
- Fully ETL approved

System Overview

Inorganic Fibreglass Media

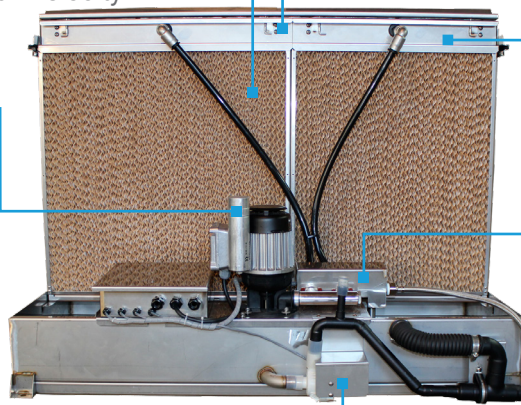
Hygienic, fire resistant and incombustible corrugated media, provides exceptional moisture absorption for continuous humidification and evaporative cooling, even at high air velocity.

Circulation Pump

Robust pump functions with tap or RO water

Drain Pump

Fast and reliable pump that lifts and re-circulates the drained water.



Parametric Design

Use the Neptronic Humidisoft web application to customize the evaporative module to your exact duct dimensions. This minimizes the need for blanking plates, thus ensuring a lower pressure drop.

Water Distribution Drawer

Easy to remove for cleaning and maintenance.

Staging Valves

Offers up to 5 stages providing very flexible and accurate control.

Silver Ion Cartridge

Water pre-treated with 5µm pre-filter and anti-bacterial silver ions prevent microbial growth.



SKV Controller

- Master/slave configuration for up to 4 evaporative modules
- On/Off or modulating control type
- Real-time clock with flexible scheduler
- Simple viewing and exporting of trending log and alarm log
- In-field firmware upgradeable via SD card
- Easy connection with only one 6-wire control cable
- Stainless steel IP56 rated (equivalent to NEMA type 4) enclosure for



Nomenclature

Type

R: Recirculation

D: Direct Feed

O: OEM

Evaporation Factor

65: 65%

75: 75%

85: 85%

95: 95%

Controller

C: Controller (standard)

B: BACnet controller

-. None

No. of Stages

1: 1 Stage

2: 2 Stages

3: 3 Stages

4: 4 Stages

5: 5 Stages

Droplet

D: Droplet separator included (when required)

Voltage

A: 120Vac

C: 230Vac

Standards for media

North American:

- UL 900, Air Filter Units, [Class I (no flame or spark, less than 2.5 sq.in of smoke)]

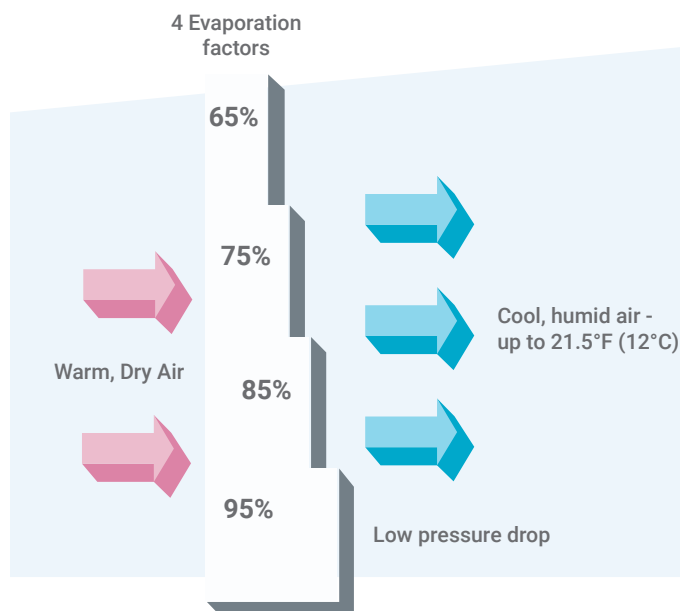
European:

- EN 13501-1, Fire classification of construction products and building elements - **Part 1: Classification using data from reaction to fire tests**
 - EN 1182, Non combustibility test method of building materials
 - EN 13823, Reaction to fire test for building products. Fire class: **A2**; Smoke production class: **s2**; flaming particles class: **d0**
- ISO 846, Evaluation of the action of microorganisms' microbiology testing lab
- ILH Berlin tested and found to fulfill the requirements from VDI6022 Part 1, suitable for use in HVAC systems

Hygienic and Safe

SKV Media Panels

- Inorganic and inflammable material
- Trouble free maintenance
- No water treatment required
- No risk of over saturation
- Media frame made of stainless steel
- Media easily removable from stainless steel frame





ATOMIZING HUMIDIFIER

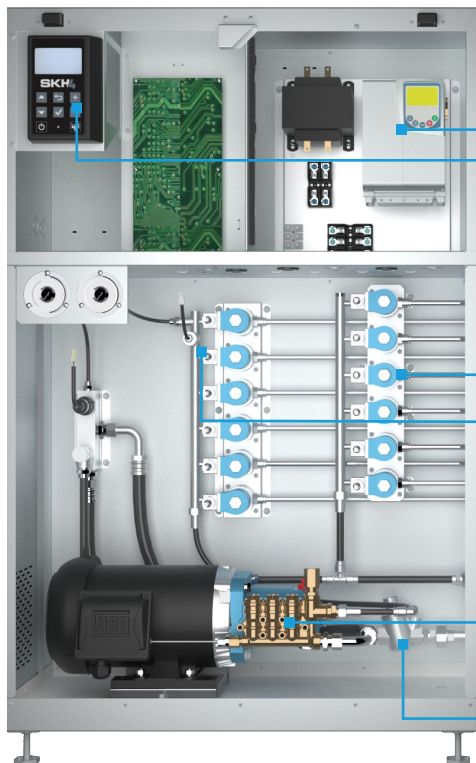
The SKH4 pumps water at high pressure through a series of nozzles to produce a fine mist. By way of the adiabatic process, the SKH4 uses energy (heat) from the surrounding air to evaporate the fine mist (water droplets). This evaporative cooling/humidification process provides a very low energy impact with power consumption values of 1/2 HP to 5 HP (10.4 kW to 73.7 kW), which is less than other technologies of equivalent capacity, such as compressed air.



SKH Advantages

- High turndown and cost-effective brass oil lubricated pump.
- Low maintenance & hygienic stainless-steel water lubricated pump
- Pump station capacity 210-2800 lb/h (100-1250 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 sprays water into fine 7-35- μ m water droplets
- New in space fan assisted mist distributors
- Nozzle rack is custom made to fit your duct or AHU dimensions

System Overview



Variable Frequency Drive :

Allows higher turn down 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

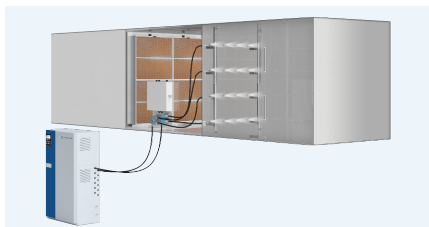
Pressure regulator and gauge:

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

Specifications

Models and Capacities

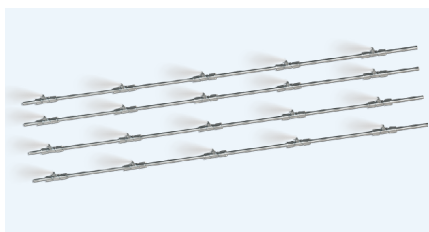
SKH4	-	N	100	B	2-2	-	E	M
		Frequency	Capacity	Stage valve	Stage valve		Voltage	Motor control
		N = 60Hz	021 = 210 lb/h 050 = 500 lb/h 100 = 1000 lb/h 185 = 1850 lb/h 280 = 2800 lb/h	B = Brass S = SS oil free	0-6		A = 120V / 1ph B = 208V / 1ph C = 220-240V / 1ph D = 208V / 3ph E = 220-240V / 3ph F = 400V / 3ph G = 480V / 3ph H = 600V / 3ph	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			



In-Duct Nozzle Rack

Custom made nozzle rack and droplet separator installed in duct or AHU for precise output and the mist absorption.

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



In-Space Nozzle Rack

Array of nozzle on a high-pressure piping network creating a series of mist cones.

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



MDU and ADU

Spray directly into the face with the help of a fan to reduce absorption in restricted spaces

- Lowers vertical absorption distances
- Improves distribution efficiency and coverage
- Multiple airflow patterns for different space configurations

neptronic.com





Specify your Humidifier online

Humidifier System Design and Specification Web Application

Ready to specify your Humidifier? Neptonic has developed a web application that saves you time when sizing and specifying Neptonic commercial, industrial or residential humidifiers.



Features

- Automatic humidification load calculation
- Web based
- Selection specific report generator
- Only options related to your selections appear
- Manage users, clients, job sites and humidifier specs
- History log



Project	Humidifier	Dispersion	Options	Reports	Pricing
Type <input checked="" type="radio"/> Isothermal (Hot Steam) <input type="radio"/> Adiabatic (cold mist)					
Category <input type="radio"/> Commercial Electric SK300 <input type="radio"/> Commercial Gas <input type="radio"/> Residential Electric <input checked="" type="radio"/> Commercial Electric SKE4 <input type="radio"/> Steam to Steam <input type="radio"/> Direct Steam					
Entering Air Conditions Temperature <input type="text" value="60"/> °F Relative Humidity <input type="text" value="35"/> %		Indoor Conditions Temperature <input type="text" value="70.0"/> °F Relative Humidity <input type="text" value="40"/> %		Distribution <input checked="" type="radio"/> In Duct <input type="radio"/> In Space	
Ventilation System <input type="radio"/> Natural <input checked="" type="radio"/> Mechanical <input type="radio"/> Economizer Total Air Flow <input type="text" value="3333"/> CFM Outside Air <input type="text" value="100"/> %					
Humidifier(s) <input checked="" type="checkbox"/> Enter Load Manually Entered Load <input type="text" value="4.50"/> lb/hr Total Capacity <input type="text" value="6.00"/> lb/hr Select Model					

Easy to Use

Go to neptonic.com, select Humidisoft and log in. Enter design requirements and Humidisoft automatically calculates the humidification load and adjusts available options based on your selections. When done, print a complete schedule, CSI and/or submittal report at the click of a button.

Project	Humidifier	Dispersion	Options	Reports	Pricing
Voltage <input type="text" value=""/> <input checked="" type="checkbox"/> Show Voltages for current model only					
Control <input type="radio"/> On / Off <input checked="" type="radio"/> Modulating					
Humidistat Type <input checked="" type="radio"/> None <input type="radio"/> Wall Humidistat HRO20 <input type="radio"/> Wall Humidity Sensor HRL24 <input type="radio"/> Wall Humidity Sensor SHR10 <input type="radio"/> Duct Humidity Sensor (return duct) SHC80 <input type="radio"/> Wall Humidistat HRO20 + Wall Humidity Sensor SHR10 <input type="radio"/> Wall Humidistat HRO20 + Duct Humidity Sensor (return duct) SHC80 <input type="radio"/> Window Temperature Sensor SHW0-11 <input type="radio"/> Outdoor Temperature Sensor STO2-11					

Humidifier Controls and Sensors

HRO20 / HROB20 (BACnet) Humidity Controller



- BACnet MS/TP (model HROB20 only)
- 4 analog and 2 dry contact outputs
- 2 external sensor inputs
- Alarm and low signal selector input
- Independently configure PID on humidify & dehumidify ramps
- Adjustable setpoint with auto reset from external sensor

SHS20 Room High Limit Humidistat



HRC20



- **SHS20** - High-limit setpoint dial (20-90 %RH)
- **HRC20** - Humidity setpoint dial (10-60 %RH)
- Built-in humidity sensor
- 24Vac or 24Vdc
- 1 dry contact output

HRL24 Room Humidistat



- Used to program the SK Humidifiers
- Icon-driven information and 1 line of text information
- 4 wires between humidistat and SK
- Programmable PID on humidity

SHR10 Wall Mount Humidity Sensor



- Built-in temperature sensor
- Plastic cover for wall mount installation
- 2 analog outputs (0 - 10 Vdc)
- High accuracy and stability

SHC80 Duct Mount Humidity Sensor



- Built-in temperature and humidity sensor
- 2 analog outputs (0 - 10 Vdc)
- Status LED

SHS80 Duct Mount High Limit Humidistat



- Built-in temperature and humidity sensor
- On/Off high limit humidistat with on-board setpoint adjustment (20-90 %RH)
- 2 analog outputs (0 - 10 Vdc)
- Status and high limit LEDs
- 1 dry contact output



Electric



Gas



Steam-to-Steam



Direct Steam



Evaporative Cooler



Evaporative



High Presssure



Software



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