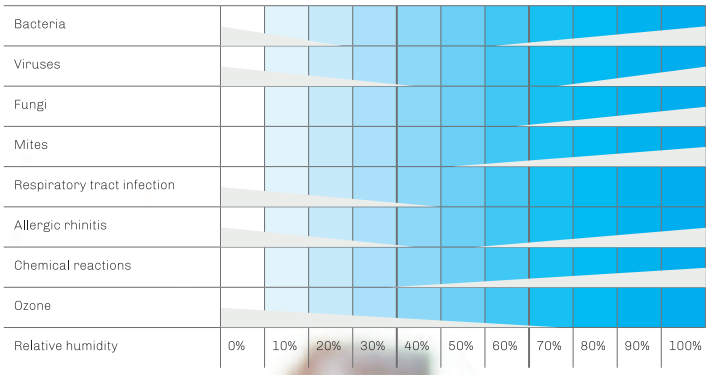
The importance of humidification

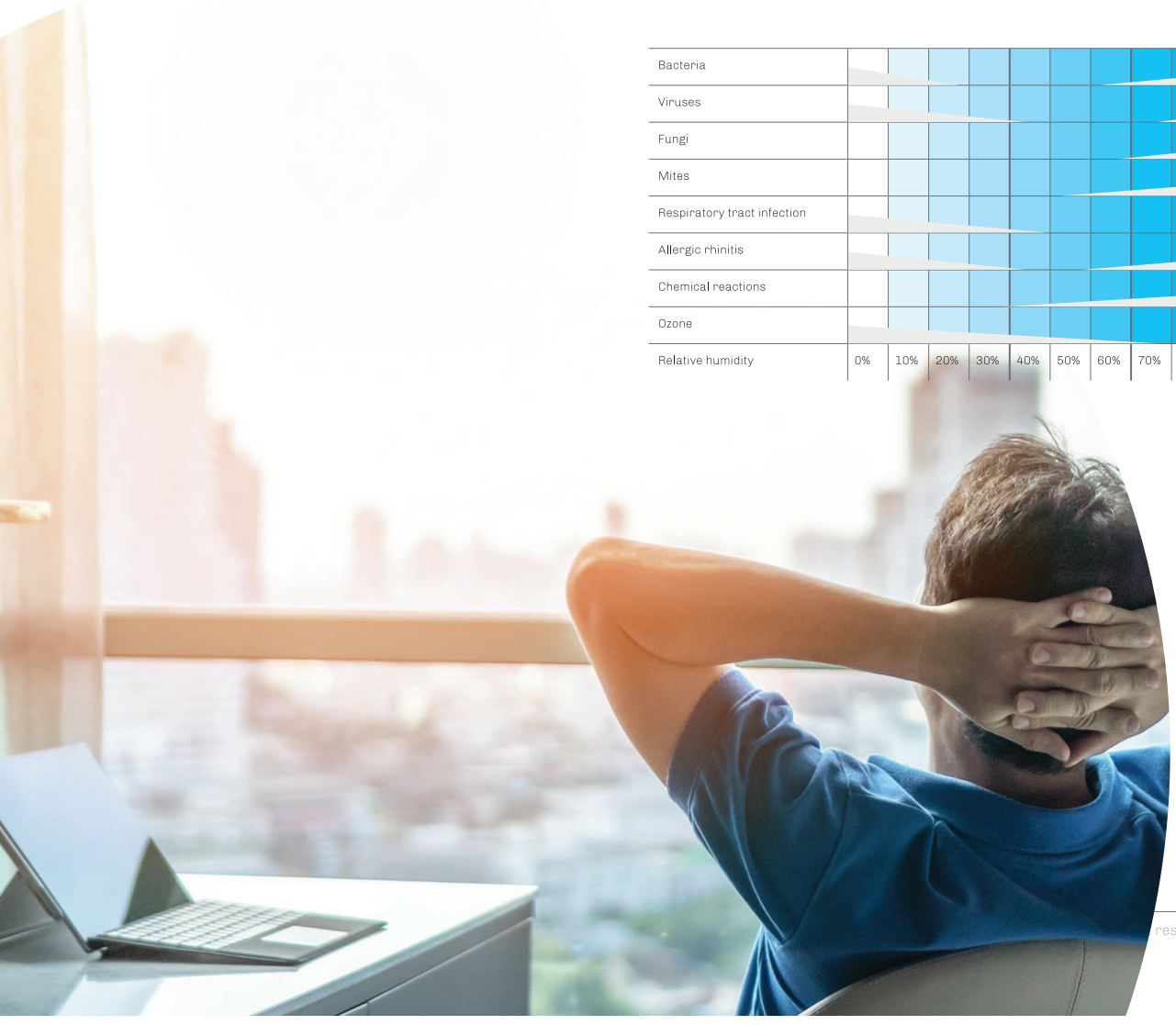
Optimal humidity for comfort and health

Scientific studies show that maintaining the correct level of humidity in a room contributes to our personal wellbeing, reducing tiredness, irritation of the skin, mucous membranes and the respiratory tract and helping prevent the proliferation of bacteria, viruses and other biological contaminants.
Controlling the amount of moisture in the air is vital in hospitals, where optimal temperature and humidity conditions help improve worker efficiency and patient wellbeing, as well as ensuring electrical medical devices and machinery work properly.

Scofield/Sterling diagram

The diagram shows the impact relative humidity in a room can have on our comfort and health.
Risks posed by unwanted microorganisms and the appearance of specific pathological symptoms are minimal when relative humidity remains within the ideal range of 40-60%.





Optimal humidity for producing and preserving

In any industrial environment, maintaining the right temperature and humidity levels is vital in order to optimise processes and obtain quality products. As a general rule, correctly controlled humidity reduces the build-up of static electricity, lowers the temperature of machinery and creates less dust.
In the textile industry, the right degree of humidity helps fabrics maintain their elasticity and reduces the risk of tearing and breakage; in the printing sector it prevents dimensional changes in paper; in the food industry it is essential for greenhouse cultivation, production and transformation processes (proofing, aging, fermentation, curing, etc.), as well as storing, preserving and displaying food because it keeps it fresh and healthy and slows down weight loss.
Places like data centres also need to control the humidity in their environments to prevent electrostatic discharge and other unpleasant electrical issues, just as works of art, musical instruments and wooden furniture can deteriorate when the air is too dry.

T/RH in the industrial sector

In certain production sectors, it is important to work within optimal temperature and humidity ranges. The maximum and minimum levels below are given purely as an indication, as each sector has different types of processes which require different temperature and hygrometric parameters.

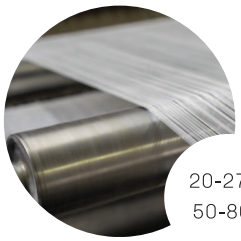
Food

0-40°C
40-85%

Chemical-pharmaceutical

20-25°C
20-70%

Textile



20-27°C
50-80%

Leather

10-23°C
55-95%

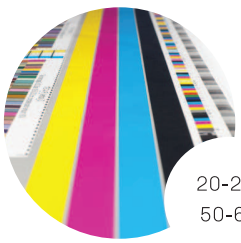
Paper

15-25°C
40-65%

Wood

18-30°C
40-60%

Printing



20-24°C
50-60%

Film making

20-25°C
40-70%

How humidification works

Steam humidification

With isothermal humidification, water is heated to boiling point to produce steam. The steam is generated either electrically or using steam boilers powered by combustion and then introduced directly into the room through blowers or into an air handling unit (AHU).

Spray humidification

Adiabatic humidification is when water is atomised through friction with the air. Water is reduced to tiny particles (aerosols) which go from the solid state to the gaseous state using ambient heat. Evaporation speed is inversely proportional to the diameter of the droplet produced and directly proportional to the speed it is introduced into the air.

Isothermal Humidifiers

- Immersed electrode humidifiers
- Heater humidifiers

Benefits

- They ensure maximum hygiene because the high temperature of the steam eliminates contaminants
- The production of humidity is closely controlled, thanks to the efficiency of the steam humidification and greater control accuracy
- They are ideal for installing in AHUs as they only need a small mixing chamber

Adiabatic Humidifiers

- Pressurised water humidifiers
- Ultrasonic humidifiers

Benefits

- They are energy efficient because water is not heated and the process uses the heat in the air
- Regular maintenance costs are reduced when demineralised water is used, as this prevents the build-up of limescale.

Isothermal Humidifiers

KT Series

Immersed electrode humidifiers

Page 8

VEH Series

Immersed electrode humidifiers for air handling units (AHU)

Page 12

REH Series

Heater humidifiers for air handling units (AHU)

Page 16

Adiabatic Humidifiers

UHF

Compact, low capacity ultrasonic humidifier

Page 20

UH-YD Series

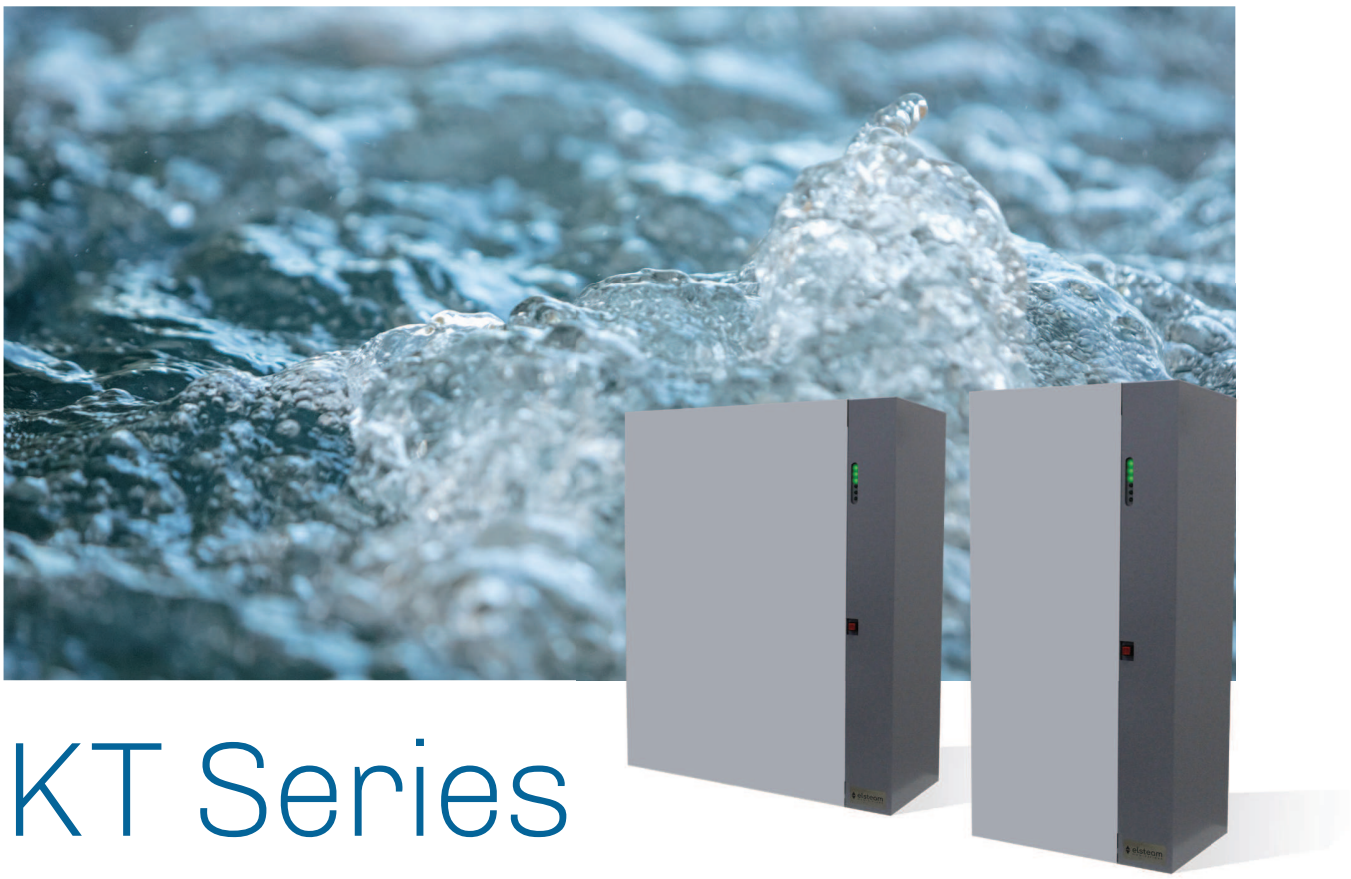
Mobile ultrasonic humidifiers

Page 24

HPN Series

High pressure humidifiers

Page 28



KT Series

Immersed electrode humidifiers

Versatile
Compact stand-alone unit suitable for many applications

Rapid
Steam is produced in a short amount of time

Accurate
The variable distance between the electrodes ensures accurate control irrespective of the water quality

Distribution
Linear distributors or blowers available

- Siphon protects against overpressure in the boiler
- Stainless steel electrodes
- Automatic draining system with 42 mm diameter
- Automatic boiler cleaning system
- Boiler cylinder and polymeric parts in self-extinguishing material
- Protection against water escaping on the steam side
- No mechanical obstructions on the steam side and drain side
- Mechanical parts designed to simplify use and maintenance

Applications

Hospitals and clean rooms

Steam produced by boiling water is germ-free because when water is heated to such a high temperature, a lot of the contaminants which are potentially harmful to our health are eliminated. Isothermal humidifiers are therefore suitable for use in sterile environments such as hospital wards, treatment rooms, operating theatres and laboratories which have precise temperature and humidity requirements. The control accuracy of steam humidification ensures compliance with the strict regulations which determine the values healthcare facilities must respect.

Museums, art galleries, churches and archives

Fluctuations in temperature and relative humidity can cause variations in the size and surface conditions of many works of art and wooden or paper objects, from canvases and paintings to antique furniture, musical instruments and books, leading to their deterioration.

Bakeries

Process humidification is a vital part of the bread making industry, particularly during proofing. Optimal temperature and humidity levels (T 23°-30°C, RH 70-80%) improve the quality of the baked goods, making the dough more elastic and giving it a perfectly golden crust in the oven. Steam humidification also ensures compliance with food safety standards.

Data centres

The energy efficiency of data centres is greatly affected by temperature and relative humidity and parameters to ensure efficient performance were established in 2008 by ASHRAE (American Society of Heating, Refrigerating and Air Conditioning) and the European association ETSI (European Telecommunications Standards Institute) with standard ETSI EN 300 019-1-3. Correct air humidification in data centres is also important to prevent short circuits which can damage the sensitive electronic equipment: electrostatic discharge is more frequent when the air is very dry because humidity is a natural conductor, earthing any potential static charge.

Turkish baths, fitness centres, beauty salons

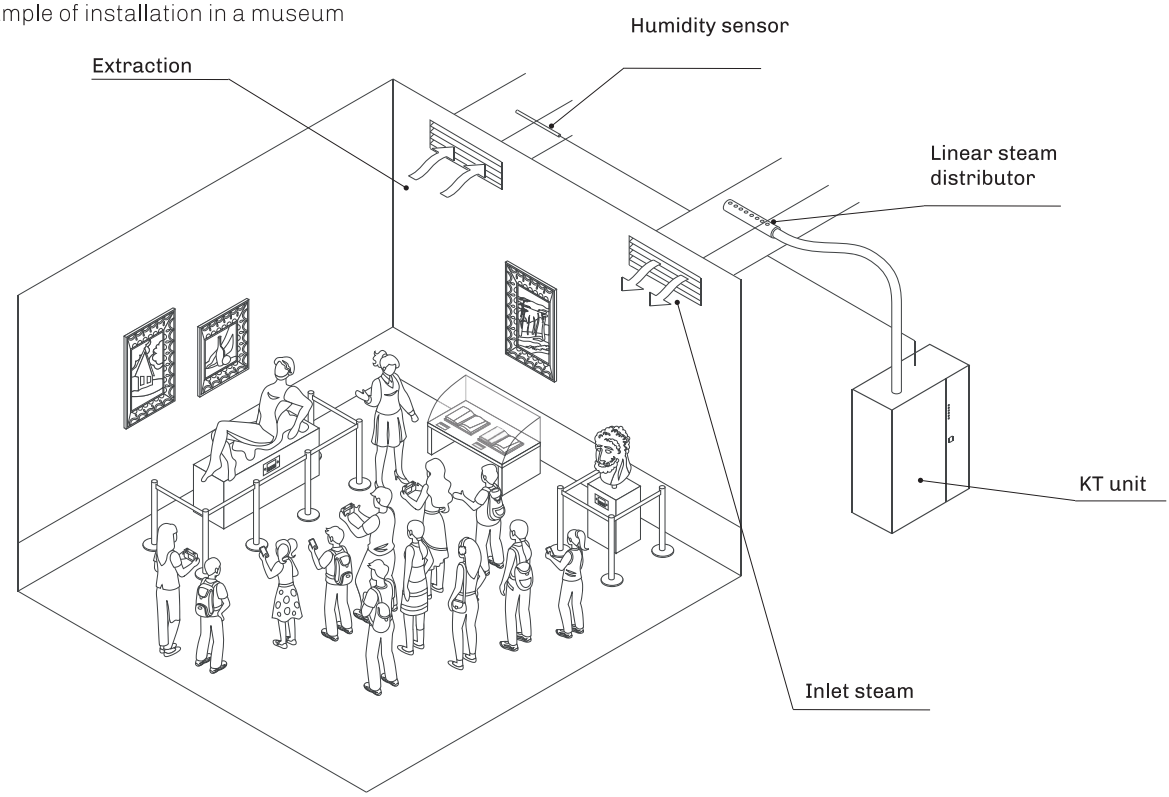
Humidifiers are used widely throughout the wellness sector, thanks to the beneficial effects steam has on the respiratory system and blood circulation, toning, relaxing and generally improving a person's psychological and physical wellbeing. In Turkish baths in particular, the amount of steam and the time exposed to it promote prolonged perspiration which helps flush out toxins and impurities from the skin, leaving it deeply cleansed.

Models available and technical features

Models		KT 3	KT 10-230	KT 20-230	KT 5	KT 10-400	KT 20-400	KT 30-400	KT 40-400	KT 60-400
STEAM PRODUCTION										
Production capacity	[kg/h]	3	10	20	5	10	20	30	40	60
Maximum pressure	[mm H2O/ bar]	0.0020-200								
Pipe connection external diameter	[mm]	40								
STEAM DISTRIBUTION										
Number of linear distributors that can be connected	[n]	1	1	2	1	1	1	1	2	2
Number of blowers that can be connected	[n]	1	1	/	1	1	/	/	/	/
ELECTRICAL PROPERTIES										
Power consumption	[kW]	2.3	7.5	15	4	7.5	15	22.5	30	45
Power supply	[Vac, Hz]	230, 50			400, 50					
Phases	[n]	1	3	3	2	3	3	3	3	3
Current per phase	[A]	10	20	40	10	10	20	30	40	60
WATER PROPERTIES										
Inlet water quality		Complies with microbiological standards for drinking water established by regulations in force where installed. Partially demineralised water may be used								
Inlet water conductivity	µS*cm	70...1250								
Inlet water hardness	°f	5...50								
Inlet water pressure	[MPa/ bar]	0.2...1/2...10								
Inlet water connection		M 3/4" GAS								
Water drain external dimensions	[mm]	42								
GENERAL CHARACTERISTICS										
Dimensions	(WxHxD [mm])	370x680x210								610x680x210
Weight	[kg]	15								25
Hydraulic unit IP protection		20								
CONTROL										
Type of controller		built-in								
Command signal		proportional (0-10 V) or ON-OFF								

Possible scenario

Example of installation in a museum



Accessories

LINEAR STEAM DISTRIBUTORS	
EHSD040	linear steam distrubutor 400 mm long
EHSD060	linear steam distrubutor 600 mm long
EHSD080	linear steam distrubutor 800 mm long
EHSD100	linear steam distrubutor 1.000 mm long
EHSD130	linear steam distrubutor 1.300 mm long
EHSD160	linear steam distrubutor 1.600 mm long
EHSD200	linear steam distrubutor 2.000 mm long
EHSDSP0	linear steam distrubutor, measure on request
STEAM BLOWERS	
EHSR0107	steam blower
DRAINAGE TANKS	
VI	drainage tank
SPECIAL STEAM PIPING	
TV	special steam piping that connects the humidifier and distributor (per meter)
FLEXIBLE HOSES TO LOAD WATER	
0031000048	flexible hose ¾" GAS female that connects the mains water and solenoid valve to load water
BOILERS	
BKT3	boiler for KT3 and KT5
BKT10	boiler for KT10
BKT20	boiler for KT20 and KT40
BKT30	boiler for KT30 and KT60

VEH Series

Immersed electrode humidifiers for air handling units (AHU)

Flexibility
Standard or customised versions available according to the size of the air handling unit

Maximum efficiency
- Hydraulic unit inside the AHU
- No loss of load
- No condensate in the distributor
- Helps heat the room

Germ-free steam
Isothermal humidification produces sterile steam

- Direct installation in AHU, without need for a technical box or distribution pipes
- Automatic draining system with 42 mm diameter
- Protects against flooding in the AHU
- Mechanical parts designed to simplify use and maintenance
- Stainless steel electrodes
- Electrical panel separate from the hydraulic unit
- Microprocessor controller with LCD user interface
- RS-485 protocol connection for remote management in MODBUS mode

Applications

Hospitals and clean rooms

Steam produced by boiling water is germ-free because when water is heated to such a high temperature, a lot of the contaminants which are potentially harmful to our health are eliminated. Isothermal humidifiers are therefore suitable for use in sterile environments such as hospital wards, treatment rooms, operating theatres and laboratories which have precise temperature and humidity requirements. The control accuracy of steam humidification ensures compliance with the strict regulations which determine the values healthcare facilities must respect.

Data centres

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Residential and commercial environments

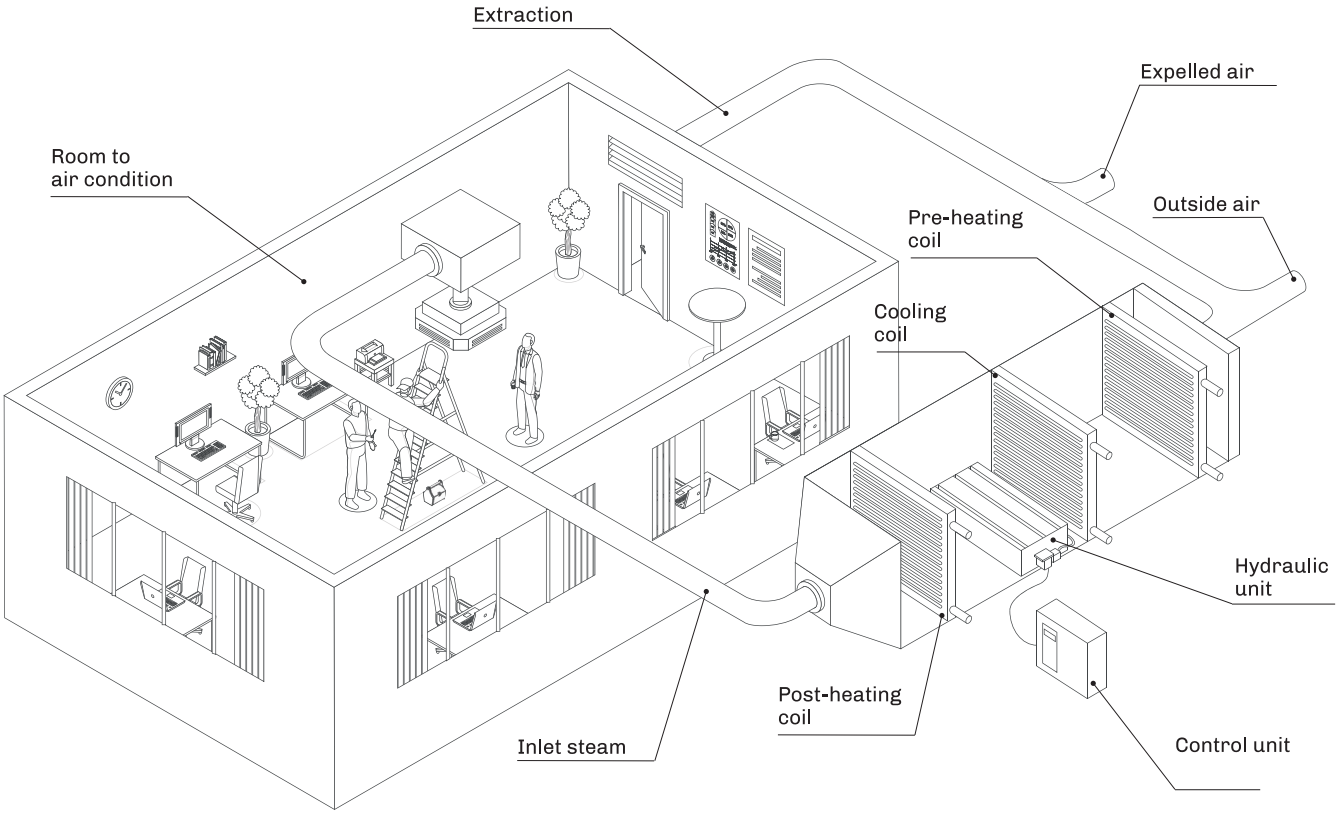
Comfort in our homes depends largely on creating the ideal climate, which science has established as being 20-24° C for temperature and 40-60 % for relative humidity. In winter in particular, when buildings are heated, the level of relative humidity can fall drastically. Skin and mucous membranes can become dry, allergies and respiratory tract infections are more likely to develop and unwanted microorganisms like bacteria and viruses can proliferate. Dry air can also affect our perception of the temperature (lower than it really is in winter), make us feel tired and cause a drop in concentration. Maintaining the right level of humidity is therefore crucial to ensure personal health and wellbeing, in the workplace too.

Models available and technical features

Models		VEH 10XS	VEH 20S	VEH 20XS	VEH 30M	VEH 30S	VEH 40L	VEH 40S	VEH 60XL	VEH 60M	VEH 80L	VEH 100XL
STEAM PRODUCTION												
Production capacity	[Kg/h]	10	20		30		40		60		80	100
ELECTRICAL PROPERTIES												
Power consumption	[kW]	7.5	15		22.5		30		45		60	75
Power supply	[Vac, Hz]	400, 50/60										
Phases	[n]	3										
Current per phase	[A]	11	22		32		43		65		87	108
WATER PROPERTIES												
Inlet water quality		Complies with microbiological standards for drinking water established by regulations in force where installed. Partially demineralised water may be used										
Inlet water conductivity	µS*cm	75...1250										
Inlet water hardness	°f	5...50										
Inlet water pressure	[MPa/bar]	0,02...1/0,2...10										
Inlet water connection		M 3/4" GAS										
Water drain external dimensions	[mm]	40										
GENERAL CHARACTERISTICS												
Control unit dimensions	[mm]	350x500x210										
Hydraulic unit dimensions	[mm]	330x167										
4 electrodes depth	[mm]	635	785	/	985	/	1185	/	1385	/	/	/
7 electrodes depth	[mm]	/	/	635	/	785	/	785	/	985	1185	1385
Weight	[kg]	15	18	18	20	20	24	24	26	26	31	33
Hydraulic unit protection		IP00										
Electrical panel protection		IP55										
REGULATION												
Control type		Integrated or remote										
Control signal		Integrated:	4...20 mA									
		Remote:	Proportional (0...10 V), ON-OFF or (0...10 V / 4...20 mA)									

Possible scenario

Example of installation in an air handling unit (AHU)



Accessories

FLEXIBLE HOSES TO LOAD WATER	
0031000048	flexible hose ¾" GAS female that connects the mains water and solenoid valve to load water

REH Series

Heater humidifiers for air handling units (AHU)

Maximum efficiency
- No loss of load
- No condensate in the distributor
- Helps heat the room

Germ-free steam
Isothermal humidification produces sterile steam

Less maintenance
Works with demineralised water

Precision
Modulating control of steam distribution

- Installed inside the condensate tank in AHUs
- Modulating precision control of steam distribution
- Automatic draining system with 42 mm diameter
- Protects against flooding in the AHU
- Heater thermal switch
- Mechanical parts designed to simplify use and maintenance
- Electrical panel separate from the hydraulic unit
- Microprocessor controller with LCD user interface
- Connection for RS-485 protocol for remote control

Applications

Hospitals and clean rooms

Steam produced by boiling water is germ-free because when water is heated to such a high temperature, a lot of the contaminants which are potentially harmful to our health are eliminated. Isothermal humidifiers are therefore suitable for use in sterile environments such as hospital wards, treatment rooms, operating theatres and laboratories which have precise temperature and humidity requirements. The control accuracy of steam humidification ensures compliance with the strict regulations which determine the values healthcare facilities must respect.

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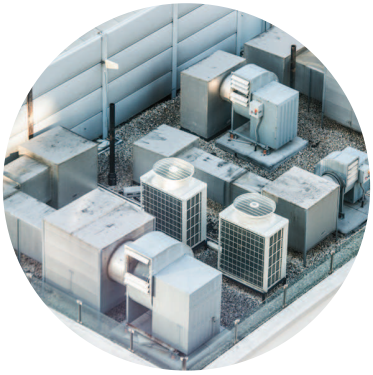
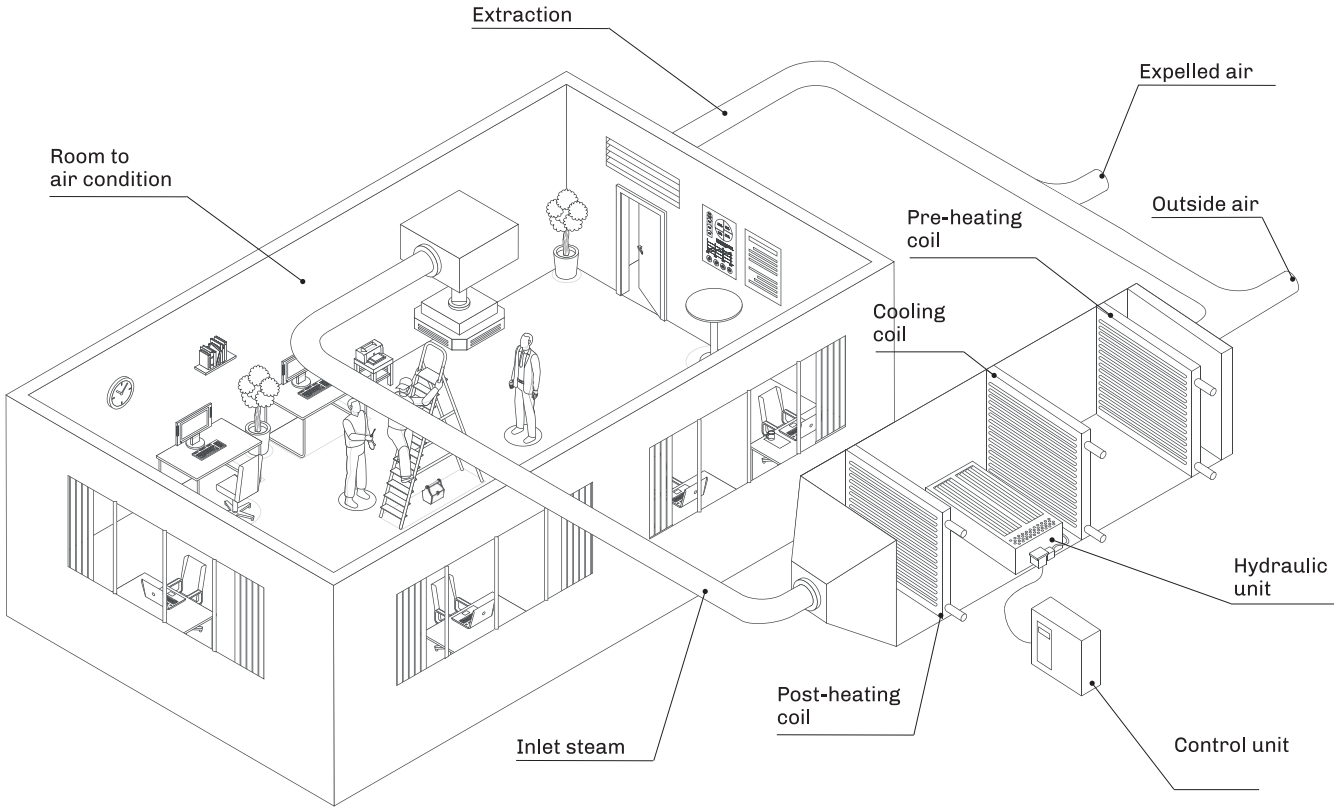


Models available and technical features

Models		REH4	REH12	REH24	REH36	REH48
STEAM PRODUCTION						
Production capacity	[kg/h]	4	12	24	36	48
Maximum pressure	[mm H2O/ bar]	no limits in normal conditions inside the AHU				
ELECTRICAL PROPERTIES						
Power consumption	[kW]	3	9	18	27	36
Power supply	[Vac, Hz]	230, 50	400, 50			
Phases	[n]	1	3			
Current per phase	[A]	13	13	26	39	52
WATER PROPERTIES						
Inlet water quality		Complies with microbiological standards for drinking water established by regulations in force where installed; completely or partially demineralised water is recommended to reduce routine maintenance				
Inlet water conductivity	µS*cm	0...1250				
Inlet water hardness	°f	0...50				
Inlet water pressure	[MPa/bar]	0.02...1/0.2...10				
Inlet water connection		M 3/4" GAS				
Water drain external dimensions	[mm]	42				
GENERAL CHARACTERISTICS						
Control unit dimensions	(HxWxD [mm])	350x400x150			450x400x200	
Hydraulic unit dimensions	(HxWxD [mm])	150x250x950	150x250x950	150x280x950	150x400x950	150x520x950
Weight	[kg]	18	23	28	33	41
Hydraulic unit protection		IP20				
Electrical panel protection		IP44				
CONTROL						
Built-in command signal		4-20mA				
Remote command signal		0-10 V, ON-OFF, 4-20mA				

Possible scenario

Example of installation in an air handling unit (AHU)



Accessories

FLEXIBLE HOSES TO LOAD WATER	
0031000048	flexible hose ¾" GAS female that connects the mains water and solenoid valve to load water

UHF

Compact, low capacity ultrasonic humidifier

Compact size
1.0 kg/h unit for small spaces

Energy saving
Energy efficient adiabatic humidifier

Silent operation
Thanks to advanced ultrasound technology

Optimisation
Constant, efficient production with no fluctuations

- Automatic draining system, stops bacteria proliferating
- Protection against no inlet water
- Less maintenance required when demineralised water is used
- Self-extinguishing plastic
- Built-in controller with simple, intuitive LED user interface

Applications

Fan coils

When a room is heated with a convection heating system, where heat is transferred by the movement of liquids (natural or forced), the air can often become very dry and filled with suspended dust particles. To ensure maximum comfort, it is advisable to install a humidity control system alongside the heating. Compact ultrasonic humidifiers are often connected to fan coils as they are easy to maintain and hygienic and provide considerable energy savings: piezoelectric transducers vibrate, producing an ultra-fine mist which is quickly absorbed in the air, humidifying it without having to heat the water.

Preservation, transportation and display of fresh produce

Preservation of fresh produce depends not only on maintaining the right temperature but also the right humidity level. One of the main advantages of humidification is that it helps reduce dehydration of products which lose on average 2 - 6% of their weight almost immediately after going on display. Adiabatic humidification also helps keep produce cool, as heat is removed from the air by evaporation. When food like fruit, vegetables, meat and fish is humidified, it is more saleable because it is healthier, fresher and more visually appealing.

Temperature/humidity/food processing units and rooms

When food is conserved and transformed in a refrigerated atmosphere, water tends to condense on the evaporating coils. An external source of humidity is therefore needed to prevent loss of weight and deterioration. When curing meats, humidity is crucial to make up for loss of moisture, while when aging cheeses it prevents the surface cracking (especially in hard cheeses).

Wine cellars

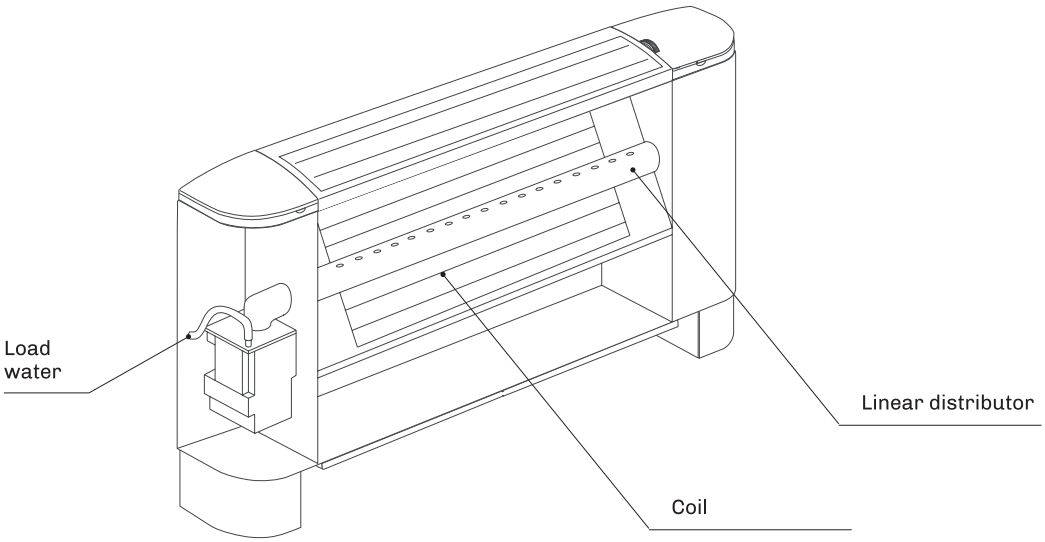
Aging wine is a delicate operation which calls for carefully controlled temperature and humidity levels, especially when aging in wooden barrels. When the air is too dry, the staves on the barrel can become dry and the wine can evaporate excessively, causing loss of product and forcing producers to top up the barrels. During aging or conservation in the bottle, if there is not enough humidity, the cork can shrink and the wine oxidises.

Models available and technical features

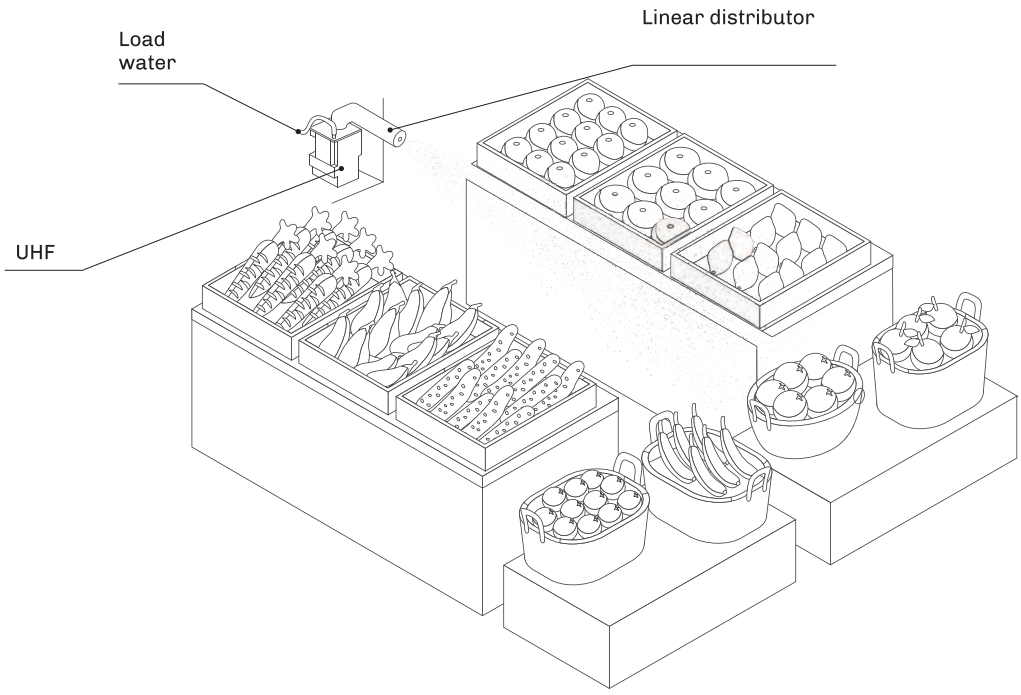
Models		UHF
MIST PRODUCTION		
Production capacity	[kg/h]	1.0
Maximum pressure	[mm H2O/bar]	0.0023-23
Pipe connection external diameter	[mm]	50
MIST DISTRIBUTION		
Number of linear distributors that can be connected	[n]	1
Air capacity	[m^3/h]	11
ELECTRICAL PROPERTIES		
Power consumption	[kW]	0.076
Power supply	[Vac, Hz]	230, 50
Phases	[n]	1
Absorbed current	[A]	0.5
WATER PROPERTIES		
Inlet water quality		Complies with microbiological standards for drinking water established by regulations in force where installed; completely or partially demineralised water is recommended to reduce routine maintenance
Inlet water conductivity	µS*cm	0...1250
Inlet water hardness	°f	recommended 0...50 suitable up to 50
Inlet water pressure	[MPa/bar]	0...1/0...10
Inlet water connection		JG8
Water drain external dimensions	[mm]	16
GENERAL CHARACTERISTICS		
Dimensions	(WxHxD [mm])	85x173x126
Weight	[kg]	1.7
IP protection		30
CONTROL		
Type of controller		built-in
Command signal		0-10 V or ON-OFF

Possible scenario

Example of application on a fan coil



Example of application on market stall



UH-YD Series

Mobile ultrasonic humidifiers

Easy to move around
Fitted with castors and a brake

Energy saving
Energy efficient adiabatic humidifier

Flexibility
Direct distribution into room can be custom configured

- Automatic draining system, stops bacteria proliferating
- Protection against no inlet water
- Built-in controller with LCD user interface
- Proprietary built-in humidity probe

Applications

Preservation, transportation and display of fresh produce

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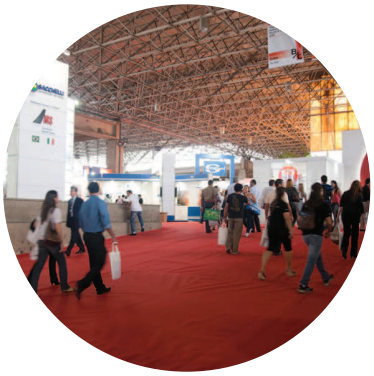


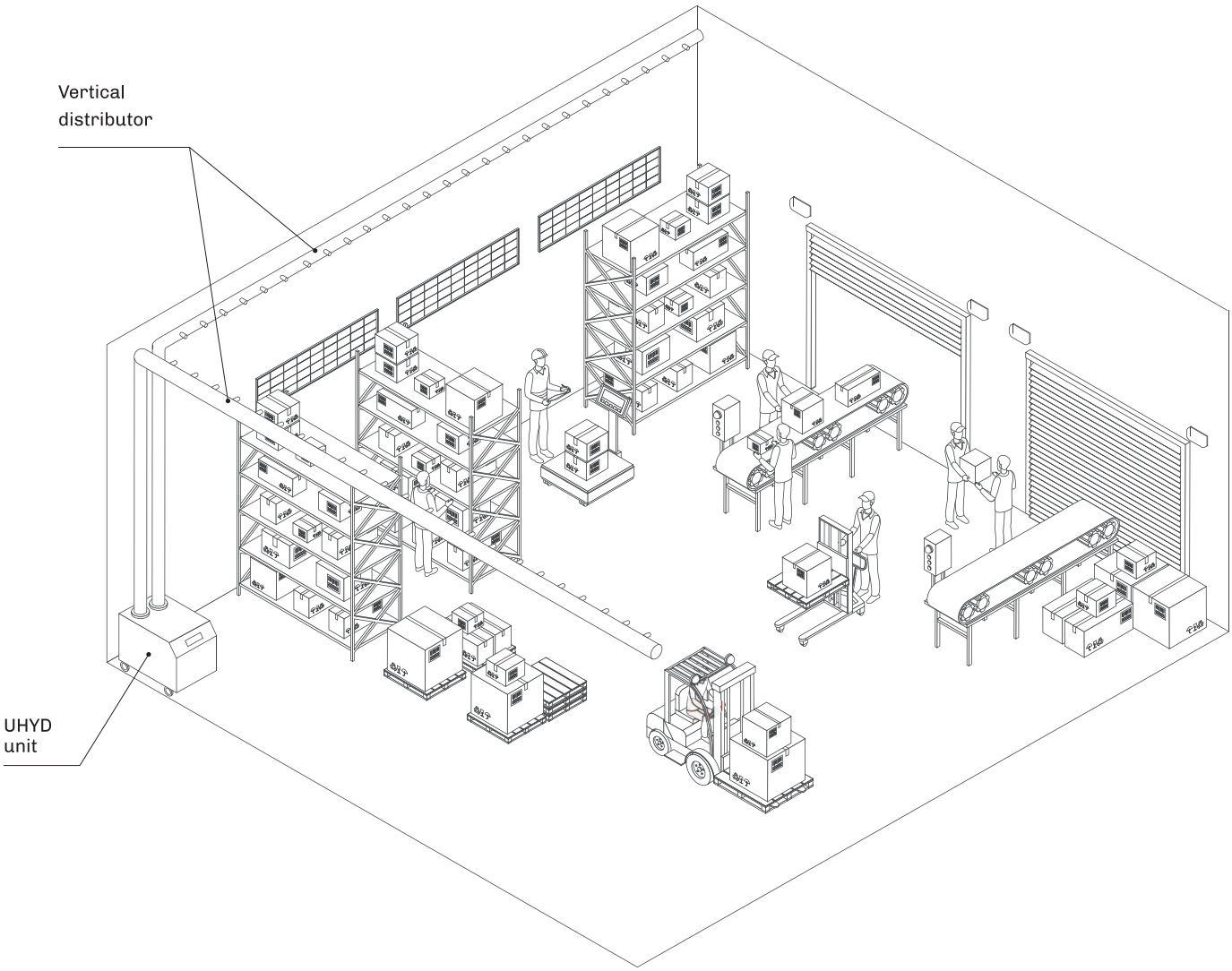
Direct humidification in residential, commercial and industrial environments

Comfort in our homes depends largely on creating the ideal climate, which science has established as being 20-24° C for temperature and 40-60% for relative humidity. In winter in particular, when buildings are heated, the level of relative humidity can fall drastically. Skin and mucous membranes can become dry, allergies and respiratory tract infections are more likely to develop and unwanted microorganisms like bacteria and viruses can proliferate. Dry air can also affect our perception of the temperature (lower than it really is in winter), make us feel tired and cause a drop in concentration. Maintaining the right level of humidity is therefore crucial to ensure personal health and wellbeing, in the workplace too.

Models available and technical features

Models		UH-03YD	UH-09YD	UH-15YD	UH-21YD
MIST PRODUCTION					
Production capacity	[kg/h]	3	9	15	21
Maximum pressure	[mm H2O/ bar]	9/0,0009	16/0,0016	16/0,0016	23/0,0023
Pipe connection external diameter	[mm]	110x1	110x2	110x3	160x2
MIST DISTRIBUTION					
Number of distributors that can be connected	[n]	1	2	3	2
Air capacity	m^3/h	180	360	540	720
ELECTRICAL PROPERTIES					
Power consumption	[kW]	0.3	0.9	1.5	2.2
Power supply	[Vac, Hz]	230, 50			
Phases	[n]	1			
WATER PROPERTIES					
Inlet water quality		Complies with microbiological standards for drinking water established by regulations in force where installed; partially demineralised water is recommended to reduce routine maintenance; completely demineralised water must not be used			
Inlet water conductivity	µS*cm	70...1250 (not completely demineralised)			
Inlet water hardness	°f	5...50			
Inlet water pressure	[MPa/bar]	0.1...0.4/1...4			
Inlet water connection		M 1/2"GAS			
Water drain external dimensions		F 1/2"GAS			
GENERAL CHARACTERISTICS					
Dimensions	(WxHxD [mm])	600x330x500	640x420x500	640x550x500	700x600x500
Weight	[kg]	28	36	35	48
IP protection	---	20	20	20	20
CONTROL					
Type of controller	---	built-in			
Command signal	---	ON-OFF with proprietary probe			

Possible scenario



Accessories

VERTICAL DISTRIBUTORS	
UHYK01	vertical distributor diameter 110 mm
UHYK02	vertical distributor diameter 160 mm

HPN Series

High pressure humidifiers

Energy saving
Energy efficient adiabatic humidifier

Distribution
Rack with configurable number of nozzles

Minimal maintenance
Works with demineralised water

Germ-free
VDI 6022 certification guarantees no risk of bacterial proliferation

- Humidity distributed into an AHU or the room
- Number of nozzles customisable (4 l/h or 8 l/h)
- Constant 80 bar pressure irrespective of number of nozzles
- Tiny particles produced (15 µm)
- Stainless steel pumping system
- Microprocessor controller with LCD user interface
- Dedicated controller on distribution rack
- Pump control with instant viewing of operational parameters

Applications

Residential and commercial environments

Comfort in our homes depends largely on creating the ideal climate, which science has established as being 20-24° C for temperature and 40-60% for relative humidity. In winter in particular, when buildings are heated, the level of relative humidity can fall drastically. Skin and mucous membranes can become dry, allergies and respiratory tract infections are more likely to develop and unwanted microorganisms like bacteria and viruses can proliferate. Dry air can also affect our perception of the temperature (lower than it really is in winter), make us feel tired and cause a drop in concentration. Maintaining the right level of humidity is therefore crucial to ensure personal health and wellbeing, in the work-place too.

Textile industry

Keeping air humidity within the parameters required for each particular product improves the quality of the fabric, process efficiency and productivity, as the yarns are more elastic, less prone to tearing (even when using high-speed looms) and produce less lint. The fabrics lose considerably less weight and static electricity, which attracts dust, is eliminated so machine performance is enhanced.

Paper and printing industry

Paper is extremely sensitive to moisture in the air and, when it is being processed, humidity levels must be controlled very carefully. Once the paper has dried, it is wound into spools which can become distorted or tear if the air is too dry and this has repercussions on the subsequent stages in the process. In the printing industry, if humidity levels are too low, errors can occur during printing due to paper distortion, sheets of paper can stick together due to a build-up of dust and static electricity on the machinery can cause serious issues.

Food industry

Industrial production of pasta and baked goods can be affected when there is not enough moisture in the atmosphere. If the temperature tends to rise during production, the ingredients, whose water content is dependent on the humidity in the surrounding atmosphere, can quickly lose water, with repercussions on their weight and quality. Cold steam generated by an adiabatic humidification system specially designed to ensure hygienic conditions during production, is the ideal, cost-effective solution for lowering the temperature while humidifying large food production departments.

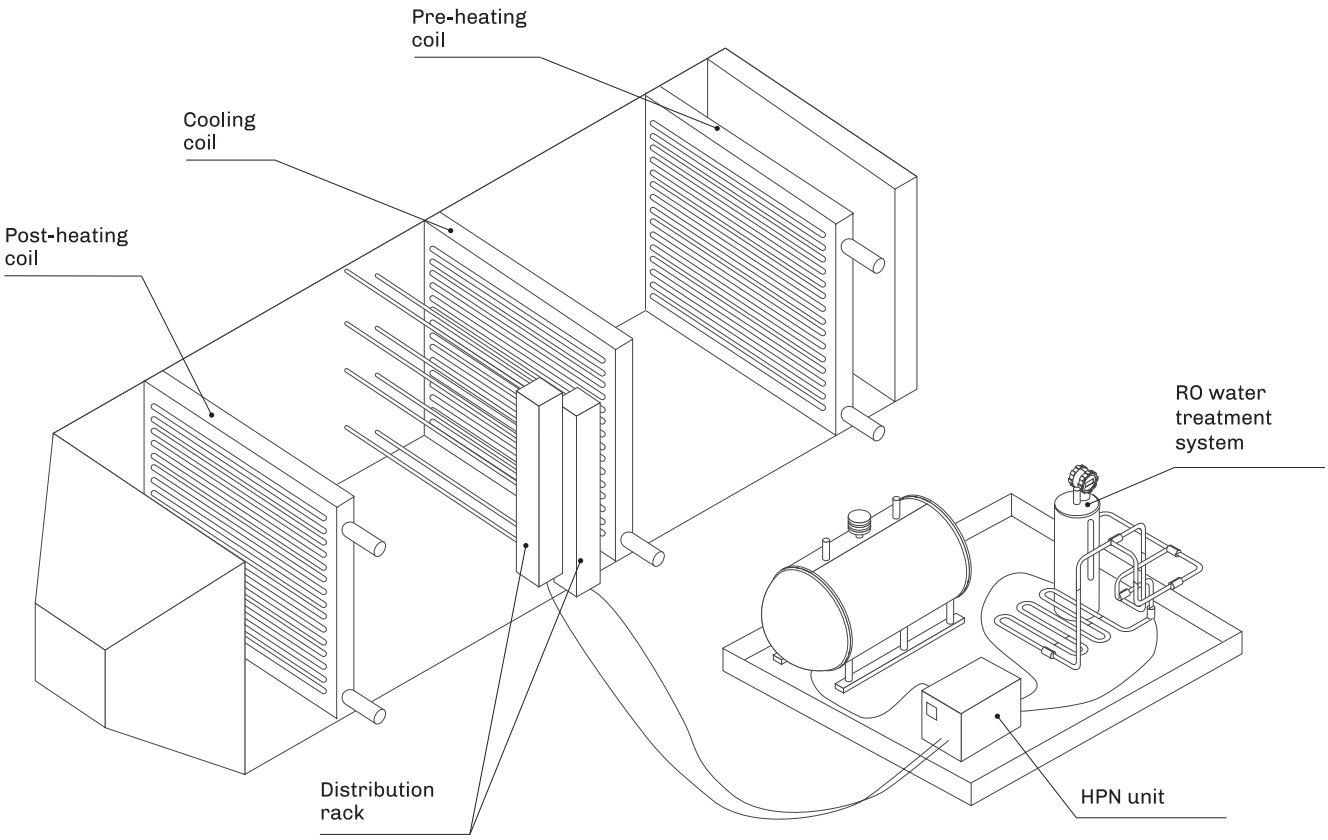
Greenhouses, botanical gardens and farms

The microclimate in greenhouses must be kept at constant, optimal levels to increase productivity and minimise water consumption. Humidification plays a key role in maintaining ideal conditions, especially for plants (tropical plants, mushrooms, etc.) which absorb moisture from the air around them. Misting systems are ideal for ensuring the right microclimate both in winter, when relative humidity falls due to heating in the greenhouse, and in summer because the cold mist cools and humidifies at the same time, according to the adiabatic principle. Misting systems are also an efficient, cost-effective solution for cooling barns: heat stress reduces productivity on farms, having a negative effect on the animals' appetite, mortality rate, fertility and growth.

Models available and technical features

Models		HPN2L DEMI	HPN3L DEMI	HPN4L DEMI	HPN5L DEMI	HPN6L DEMI	HPN7L DEMI	HPN8L DEMI	HPN9L DEMI	HPN11L DEMI	HPN14L DEMI
SPRAY PRODUCTION											
Production capacity	[kg/h]	120	180	240	300	360	420	480	540	660	840
Maximum pressure	[MPa/bar]	8/80	8/80	8/80	8/80	8/80	8/80	8/80	8/80	8/80	8/80
SPRAY DISTRIBUTION											
Distribution rack (HPNxRACKxxx)		Customisable									
Maximum number of nozzles (8l/h) controlled by the humidifier	[n]	15	22	30	37	45	52	60	67	82	105
ELECTRICAL PROPERTIES											
Power consumption	[kW]	1.5	1.5	1.5	1.5	1.5	1.5	2.2	2.2	4	4
Power supply	[Vac, Hz]	230, 50/60	230, 50/60	230, 50/60	230, 50/60	230, 50/60	230, 50/60	230, 50/60	230, 50/60	400, 50/60	400, 50/60
Phases	[n]	1	1	1	1	1	1	1	1	3	3
WATER PROPERTIES											
Inlet water quality		Complies with microbiological standards for drinking water established by German standard (TrinkwV) and demineralised (completely or partially) water from drinking water. A VDI 6022 non return valve must be installed if non-demineralised water is used									
Inlet water conductivity	µS*cm	0...100									
Inlet water hardness	°f	0...5									
Inlet water pressure	[MPa/bar]	0.02...14/0.2...10									
Inlet water connection		M 3/4" GAS									
Water drain external dimensions	[mm]	M 1/4" GAS									
GENERAL CHARACTERISTICS											
Dimensions	(WxHxD [mm])	515x600x335						660x600x335			
Weight	[kg]	50									
Main unit protection		IP20									
Distribution rack protection		IP40									
CONTROL											
Type of controller		built into hydraulic unit, remote on distribution rack									
Command signal		4... 20 mA (built-in controller), 0-10 V or ON-OFF (remote controller)									

Possible scenario



Accessories

DISTRIBUTION RACKS	
HPNxxRACKxxx	customisable distribution rack
MIST ELIMINATORS	
HPNDROPXX	mist eliminator various sizes
CONNECTING FLEXIBLE HOSES	
0017020016	flexible hose 3/8 " GAS female that connects the distribution rack (per meter)