

# OEM Steam Humidifier

TSH series are electrode steam humidification units used for humidifying air ducts or air handling unit cells.

Steam is directed into the air duct or air handling unit through a stainless steel distributor. It is easy to install and can be used either suspended from the unit or placed on the floor. To operate the device, simply connect the water inlet, water drainage line, steam and distributor connections, electrical wiring and humidity sensor connections. The device will then perform automatic humidification via to its smart humidity and capacity control system.

TSH series humidification units can be used with air handling units that do not have built-in humidity control. The necessary humidity sensor signal for humidity control is obtained from the control panel of the air handling unit manufacturer.



# OEM STEAM HUMIDIFIER

## Accessories



### Coated Outer Sheet Metal

Carrier panel made from corrosion-resistant painted sheet metal



### Drain Valve

An automatic and effective drain valve that minimizes water loss



### Steam Cylinder

Technowell steam cylinder is an essential component of steam humidification units. The steam cylinder accumulates deposits produced during the steam process, which can be easily cleaned. Steam cylinders that have reached the end of their useful life can be quickly replaced to ensure reliable humidity control.

Due to their advanced conductivity management and use of current-regulated electrodes, steam cylinders can operate precisely.



# Functional Description

The Technowell TSH steam humidifier is a non-pressure steam generator using electrode heating.

This unit is designed for air humidification through a steam distributor (steam distribution pipe, external fan unit).



## Steam Production

Electrodes with high electrical conductivity and long working life are contained inside the steam cylinder. The electrodes are supplied with current settings as the device needs steam. The inlet valve opens at the same time, causing water to enter the steam cylinder from below through the water chamber and feed line.

When the electrodes come into contact with water, a current begins to flow between the electrodes, eventually heating and vaporizing the water.

The more water that comes into contact with the electrode surface, the higher the current consumption and therefore the steam capacity. The inlet valve closes when the desired steam capacity is reached. The inlet valve opens until the necessary capacity is restored if the steam generation falls below a certain capacity or a certain percentage due to the lowering of the water level (e.g. due to evaporation or evacuation).

If the required steam output is less than the actual output, the inlet valve is closed until the desired output is reached by lowering the water level (evaporation process).



## Level Monitoring

When the water level rises, a sensor in the steam cylinder cover detects it. The inlet valve closes when the sensor comes into contact with water.



## Evacuation

The increased mineral content caused by the evaporation process increases the conductivity of water. Eventually, if this concentration mechanism is allowed to proceed, an unacceptably high current consumption would result. To prevent this concentration from reaching a value unsuitable for the process, a certain amount of water is periodically drained from the cylinder and replaced by water. The water hardness to be used should be in the range of 10 ° - 40 ° f (CaCO<sub>3</sub> equal to 400 ppm), the water conductivity should be in the range of 75 - 1250 μS/cm.

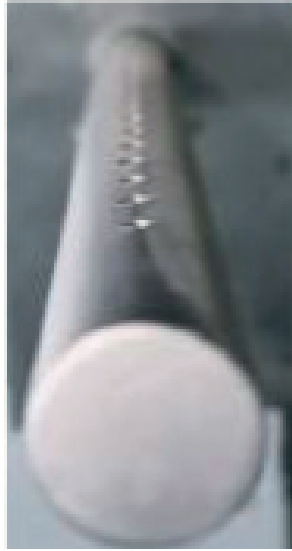


## Control

Steam production, humidity control or On/Off control can be done via MODBUS communication.

- Automatic water filling and drainage in the unit
- Automatic cleaning based on working conditions
- Water level alert
- Fault Warning
- Remote control with RS 485 protocol
- 0-10V, 0-20 mA, 4-20 mA, On-Off
- Supply power 380V
- Output power 220V - 12VDC
- 0 °C - 50 °C operating conditions
- %20 RH - %90 RH humidity conditions





## Steam distribution diffuser for air duct or air handling unit humidification cell installation

It ensures that the steam obtained from the steam humidifier is distributed homogeneously in the air duct or air handling unit humidifier. The steam distribution diffuser is made of stainless steel material. The steam distribution diffuser is chosen based on the steam humidifier's capacity and the channel width for horizontal installation or the channel height for vertical installation.



## Steam distribution hose

It provides the steam obtained in the steam cylinder to enter the steam distribution diffuser. Long-lasting and free of toxic materials, the steam distribution hose is made of special medical rubber that can withstand temperatures of up to 120 °C. The length of the steam delivery hose should be no more than 3 meters. The bend radius of the steam distribution hose must be at least  $r = 300$  mm, with an upward slope of 20% or a downward slope of 5%.

3



## Water inlet hose

The steam humidifier's water inlet hose was manufactured specifically for it. One connection end is made of G 3/4 "plastic and the other side is made of G 1/2" copper material. The hose is made of a durable rubber material.

4



## Condensate drain hose

The condensate drain hose is made of plastic that can withstand high temperatures. Its structure is pliable. The condensate drain hose is shaped into a siphon and guided to the discharge funnel with a minimum inclination of 20% (minimum hose bending diameter Ø200mm).

5



## Drainage hose

It is used to remove water from the steam cylinder that has risen in mineral concentration as a result of the evaporation process.

**MODEL****OEM TSH-4****OEM TSH-8****OEM TSH-15****OEM TSH-30****OEM TSH-42**STEAM  
CAPACITY

0,8 - 5,0 kg/h

1,6 - 13,0 kg/h

3,0 - 18,0 kg/h

6,0 - 35,0 kg/h

8,0 - 45,0 kg/h

## POWER SUPPLY

380 V -50 Hz

380 V -50 Hz

380 V -50 Hz

380 V -50 Hz

380 V -50 Hz

OPERATION  
CURRENT

1 - 6 A

2 - 12 A

3,5 - 20 A

6,8 - 39 A

9 - 51 A

## RATED POWER

0,60 -3,75 kW

1,20 -9,75 kW

2,25 -13,50 kW

4,50 -26,25 kW

6,00 -33,75 kW

## STEAM OUTLET

1xØ 30mm

1xØ 30mm

1xØ 30mm

1xØ 30mm

1xØ 30mm

WATER TANK  
QUANTITY

1

1

1

1

1

WORKING  
CONDITIONS1°C - 40 °C  
%10 - % 90 RH1°C - 40 °C  
%10 - % 90 RH1°C - 40 °C  
%10 - % 90 RH1°C - 40 °C  
%10 - % 90 RH1°C - 40 °C  
%10 - % 90 RHSTORAGE  
CONDITIONS1°C - 70 °C  
%5 - % 95 RH1°C - 70 °C  
%5 - % 95 RH1°C - 70 °C  
%5 - % 95 RH1°C - 70 °C  
%5 - % 95 RH1°C - 70 °C  
%5 - % 95 RHWATER INLET  
CONNECTION

G 1/2"

G 1/2"

G 1/2"

G 1/2"

G 1/2"

WATER INLET  
TEMPERATURE

1°C - 40 °C

1°C - 40 °C

1°C - 40 °C

1°C - 40 °C

1°C - 40 °C

WATER INLET  
PRESSURE

1 - 6 bar

1 - 6 bar

1 - 6 bar

1 - 6 bar

1 - 6 bar

DRAINAGE  
FLOWRATE

1,2 lt/min

1,2 lt/min

1,2 lt/min

1,2 lt/min

1,2 lt/min

## WATER HARDNESS

15 -40 F°s

15 -40 F°s

15 -40 F°s

15 -40 F°s

15 -40 F°s

WATER  
CONDUCTIVITY

350 -1250 µS/cm

350 -1250 µS/cm

350 -1250 µS/cm

350 -1250 µS/cm

350 -1250 µS/cm

DRAINAGE  
TEMPERATURE

≤ 100 °C

≤ 100 °C

≤ 100 °C

≤ 100 °C

≤ 100 °C

DRAINAGE  
PIPE CONNECTION

Ø 22mm / Ø 30mm

Ø22mm / Ø 30mm

Ø22mm / Ø 30mm

Ø 22mm / Ø 30mm

Ø 22mm / Ø 30mm

DIMENSIONS  
(A X B X C)

295x515x265 mm

295x515x265 mm

318x720x280 mm

447x805x380 mm

447x805x380 mm

\*OEM TSH-60/84/120 options are available. The OEM TSH-60/84 models come with 2 steam tanks and 2 steam outlets, while the OEM TSH-120 model features 3 steam tanks and 3 steam outlets.

\*The control board is included.

**technowell**

[technowell.com.tr](http://technowell.com.tr)