



neptronic®

www.neptronic.com



Humidification Applications..

Do and Dont's

Luis I Melgares, VP, Sales & Marketing
B.A, *Pol. Sci.* M.E.



Agenda

- ✓ *About Neptronic*
- ✓ *Why Humidity*
- ✓ *Importance of Humidity*
- ✓ *Types of Humidifiers*
- ✓ *The Humidity Challenges in the Commercial world*
- ✓ *Staying away from Wrong/bad installations*
- ✓ *Some examples*



About Neptronic



- ✓ Established in **1976**
- ✓ Design and manufacture innovative HVAC products
- ✓ HQ and manufacturing facility (80,000 sq ft /7, 500 m²) located in Montreal, Quebec, Canada
- ✓ Over 300 dedicated employees

ISO 9001:2015
Certified



About Neptronic

Office Locations

- ✓ *Montreal, Canada*
- ✓ *Colorado, USA*
- ✓ *Oregon, USA*
- ✓ *London, England*
- ✓ *Dubai, UAE*
- ✓ *Singapore*

Worldwide Presence

- Exports over 75% of its sales outside of Canada
- Highly skilled distribution network around the globe



About Neptronic

Product Lines



**HVAC
CONTROLS**



**ELECTRIC
ACTUATORS**



**ACTUATED
VALVES**



HUMIDIFIERS



**ELECTRIC
HEATERS**



Our Many Patents

- ✓ The Enerdrive System US. and International Patents
 - ✓ Actuators
- ✓ Ultrasound Air Velocity Detector US. Patents
 - ✓ Controls
- ✓ The AFEC System US. and International Patents
 - ✓ SK Humidifiers
- ✓ Humidifier Siphon System, US & Canadian Patents
 - ✓ SK Humidifiers
- ✓ HEC, US & Canadian patents
 - ✓ Electric Duct Hesters
- ✓ Gas Humidifier, US Patent
 - ✓ SK Humidifier



Lets talk Humidity...



Why Humidity

- **Indoor Air Quality (Health, Comfort and Productivity)**
 - School, Hospital, Office, Home, Hotel, Conference room
- **Controlled Environment for a specific process**
 - Printing, Clean rooms, Pharmaceuticals, Laboratories, Spray paint booth
- **Maintain Physical Quality/Integrity of Material**
 - Museums, Archives, Libraries, Wood/Paper/Textile industries, Food processing
- **Prevent Static electricity discharges**
 - Computer rooms, Hazardous environments, Electronic components manufacturing



Why Humidity

- **Indoor Air Quality (Health, Comfort and Productivity)**
 - School, Hospital, Office, Home, Hotel, Conference room
- **Controlled Environment for a specific process**
 - Printing, Clean rooms, Pharmaceuticals, Laboratories, Spray paint booth
- **Maintain Physical Quality/Integrity of Material**
 - Museums, Archives, Libraries, Wood/Paper/Textile industries, Food processing
- **Prevent Static electricity discharges**
 - Computer rooms, Hazardous environments, Electronic components manufacturing



Why Humidity

Museums / Libraries

35-50%RH



Offices / Hotels / Schools

35-40% RH



Clean rooms / Data Centers

35-60% RH



Pharmaceuticals / Labs

40-50% RH



Hospitals / Health Care

35-50% RH



Printing Industry

40-50% RH

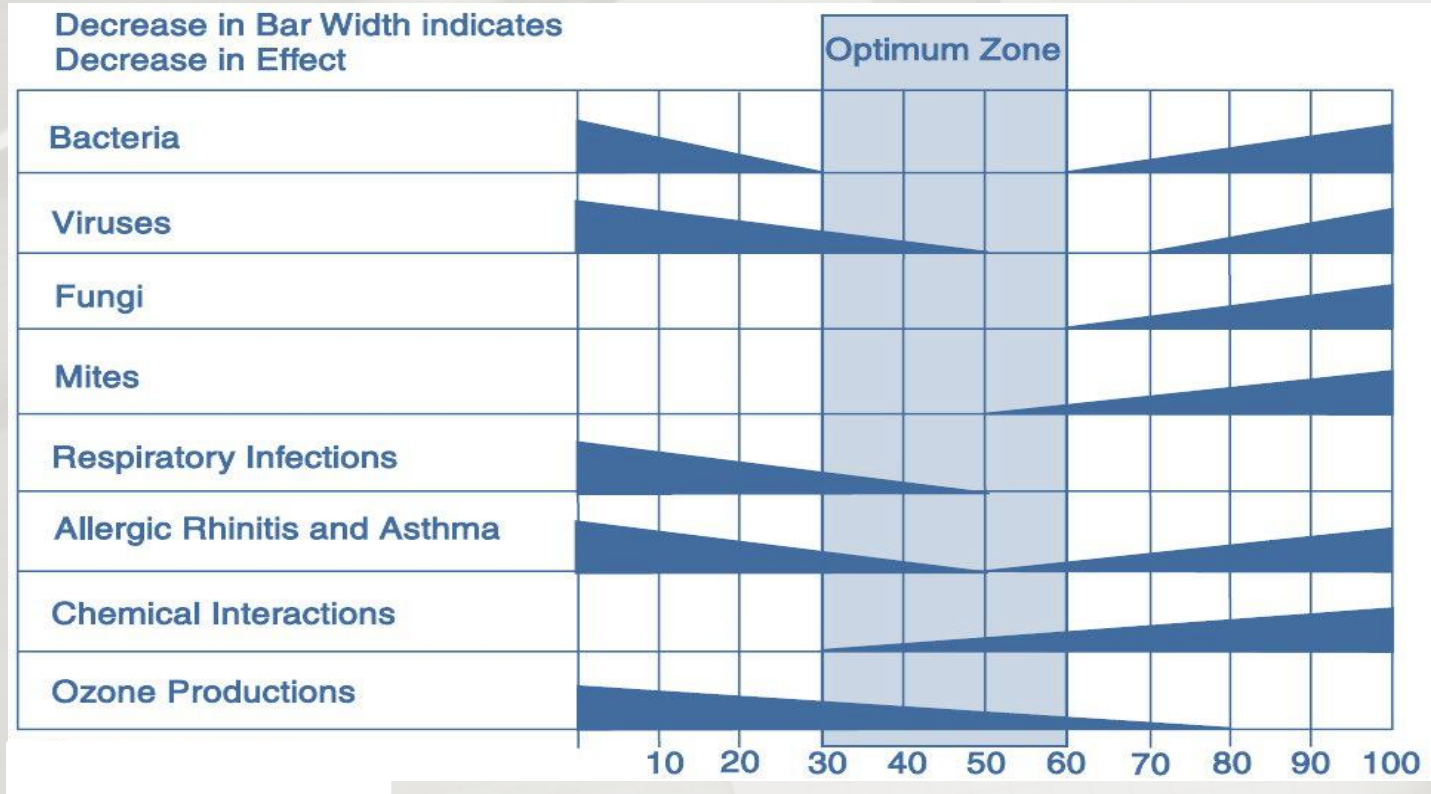


Tobacco Industry

60-70% RH



Importance of Humidity



Types of Humidifiers

Isothermal Humidifiers

In isothermal humidification, the energy required to vaporize water is generated by the machine, which in turn raises the humidity.

SKE4
ELECTRIC



SKG4
GAS FIRED



SKS4
STEAM TO STEAM



SKD
DIRECT STEAM



Types of Humidifiers

Adiabatic Humidifiers

Is a process where the sensible heat of the air evaporates the cold water from the humidifier raising the relative humidity. This type of humidifier drops the air temperature (cooling effect).



Types of Humidifiers

From our competition

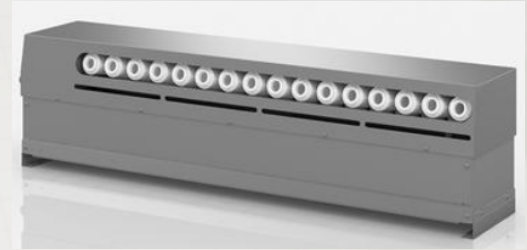
Isothermal Humidifiers

Electrode



Adiabatic Humidifiers

Ultrasonic



Compressed air
Humidifier



The Humidity Challenges in the Commercial world

- ✓ Proper design conditions
- ✓ Required Capacity vs energy available
- ✓ Dimensions of the grids
- ✓ Type of manifold
- ✓ Distance of absorption
- ✓ Type of water
- ✓ Maintenance
- ✓ Wrong/bad Installations

The screenshot displays the Neptronic Humidisoft web application. The interface includes a navigation bar with tabs for Project, Humidifier, Dispersion, Options, Reports, Pricing, and Project Info. The main content area is divided into several sections:

- Duct Dimensions:** Duct Width (1025 mm), Duct Height (914 mm).
- Calculated Manifold:** Min. Temp Before Humidification (12.8 °C), Max Absorption Distance Allowed (1270 mm).
- Dispersion:** A table showing different manifold configurations and their dimensions.
- Dispersion Options:** Includes a checkbox for "Insulated Tubes for the Multi-Stream HC with 3i-Stream technology".
- Pay Back:** A section for calculating the payback period.

The table under the Dispersion section is as follows:

| Manifold | # Tubes | Max Dimension(s)(mm) | Abs Dist(mm) |
|--------------|---------|----------------------|--------------|
| 3AW | 1 | 915 | 229 |
| 3AW EE | 1 | 915 | 229 |
| Multi-Stream | 3 | 916 x 814 | 229 |
| Multi-Stream | 4 | 916 x 814 | 152 |
| Multi-Stream | 5 | 916 x 814 | 152 |
| Multi-Stream | 6 | 916 x 814 | 152 |
| Multi-Stream | 7 | 916 x 814 | 152 |
| None | 7 | 916 x 814 | 152 |



The Humidity Challenges in the Commercial world

✓ *The 3 Big Challenges for the proper operation of a Humidifier... while in operation...*

- 1. Type of water*
- 2. Poor Maintenance*
- 3. Installation*



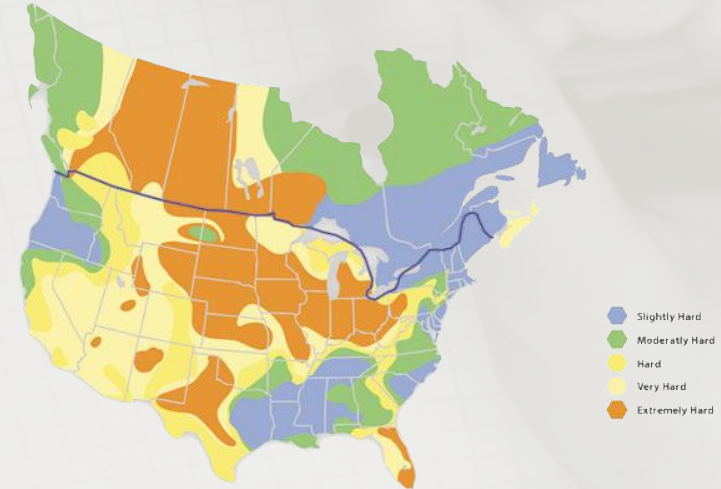
The Humidity Challenges in the Commercial world

- ✓ *The 3 Big Challenges for the proper operation of a Humidifier ... while in operation...*

1. *Type of water*

Water Hardness Classifications

| Classification | Parts Per Million or Milligrams Per Liter |
|-----------------|---|
| Soft Water | Less than 17.1 |
| Slightly Hard | 17.1 - 60 |
| Moderately Hard | 60 - 120 |
| Hard | 120 - 180 |
| Very Hard | Over 180 |



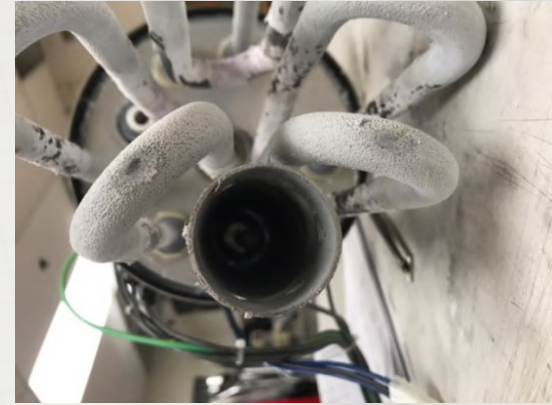
<https://dengarden.com/misc/What-is-Hard-Water-and-should-we-drink-it>
<http://www.tamhil.com/1/hard-water,-scale,-calcium>



The Humidity Challenges in the Commercial world

✓ *The 3 Big Challenges for the proper operation of a Humidifier ...while in operation...*

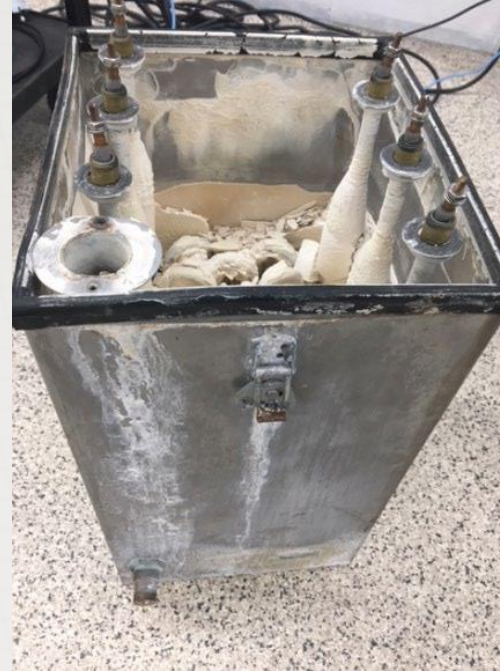
1. *Type of water*



The Humidity Challenges in the Commercial world

- ✓ *The 3 Big Challenges for the proper operation of a Humidifier... while in operation...*

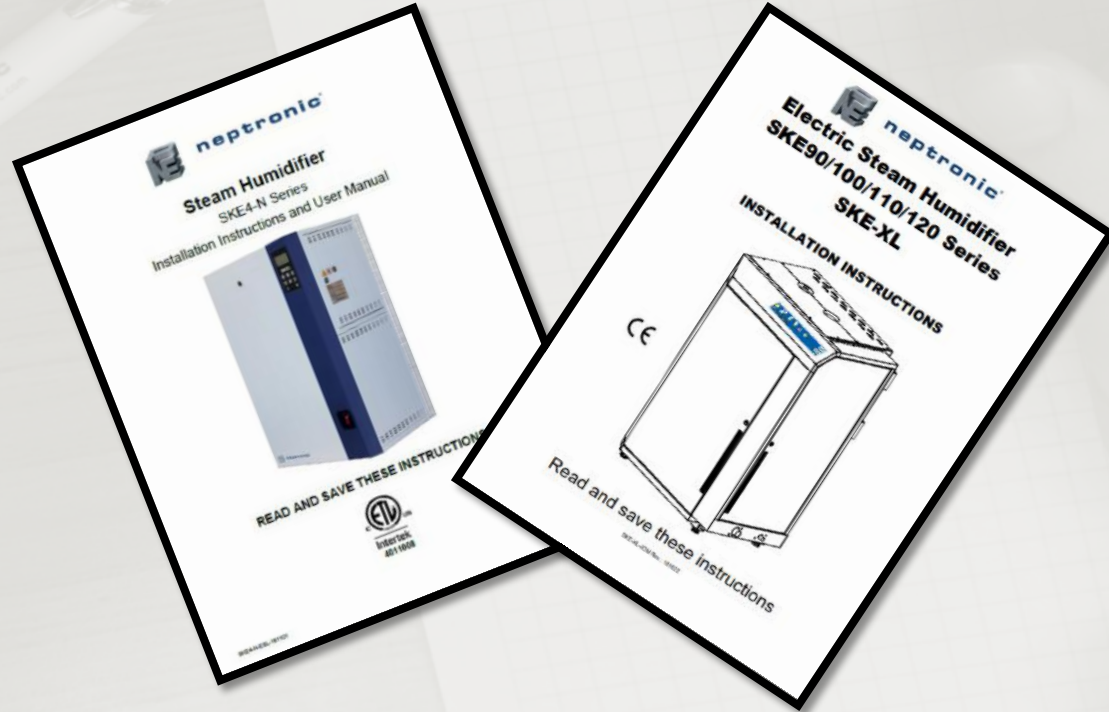
2. Poor Maintenance



The Humidity Challenges in the Commercial world

- ✓ *The 3 Big Challenges for the proper operation of a Humidifier ... while in operation...*

3. Installation



Staying away from Wrong/bad installations

Boiling water is a simple process...



Staying away from Wrong/bad installations

Installation

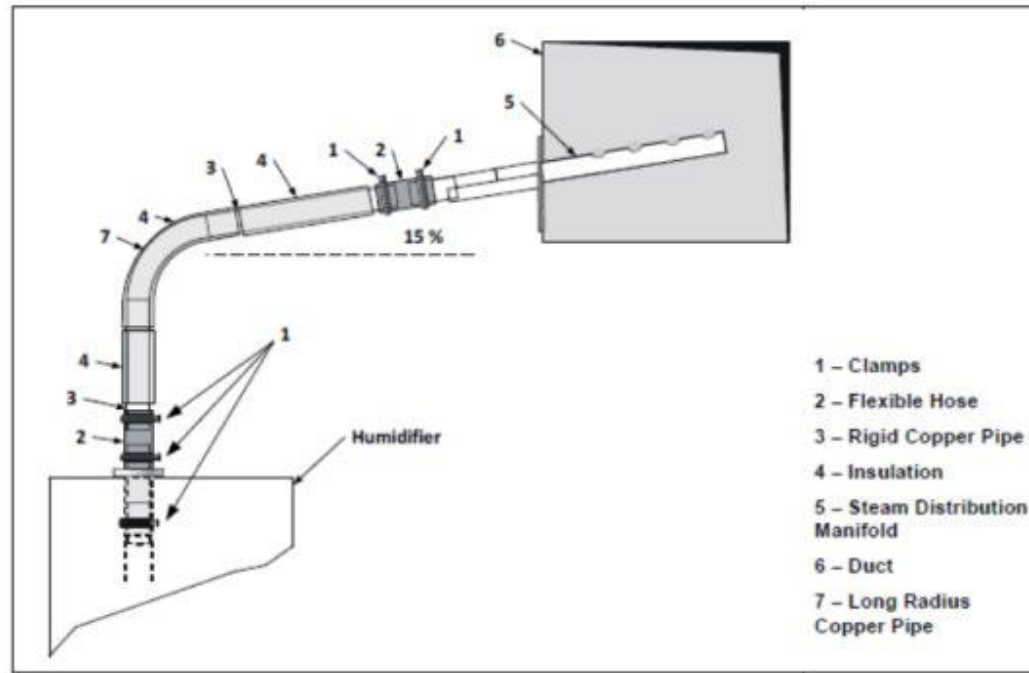


Illustration 29 - Steam Output Connections: Typical Installation



Installation Instructions and User Manual

S Trap Installation on the Steam Line

- * The lowest point of any steam hose or rigid pipe must be the humidifier. If the humidifier cannot be the lowest point of the piping, install one or more steam traps (S Type) at the lowest point(s) of the steam supply piping. The steam separator (S Type) must be installed higher than the static pressure of the system by at least 2" (51 mm).

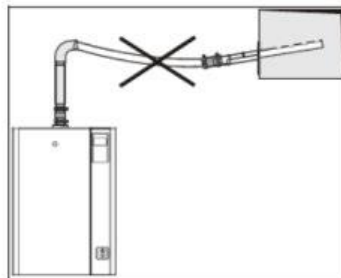


Illustration 30 - Steam Output Connection: Incorrect Installation

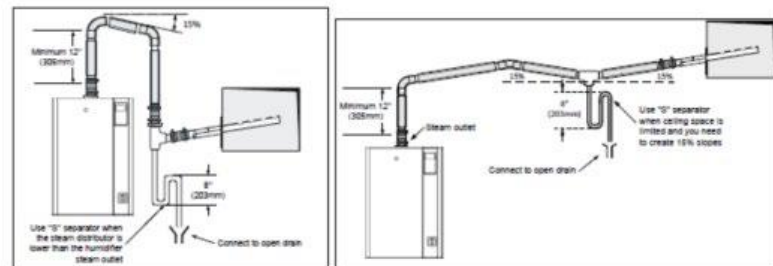


Illustration 31 - Steam Separator (S trap) Installation



neptronic®

Staying away from Wrong/bad installations

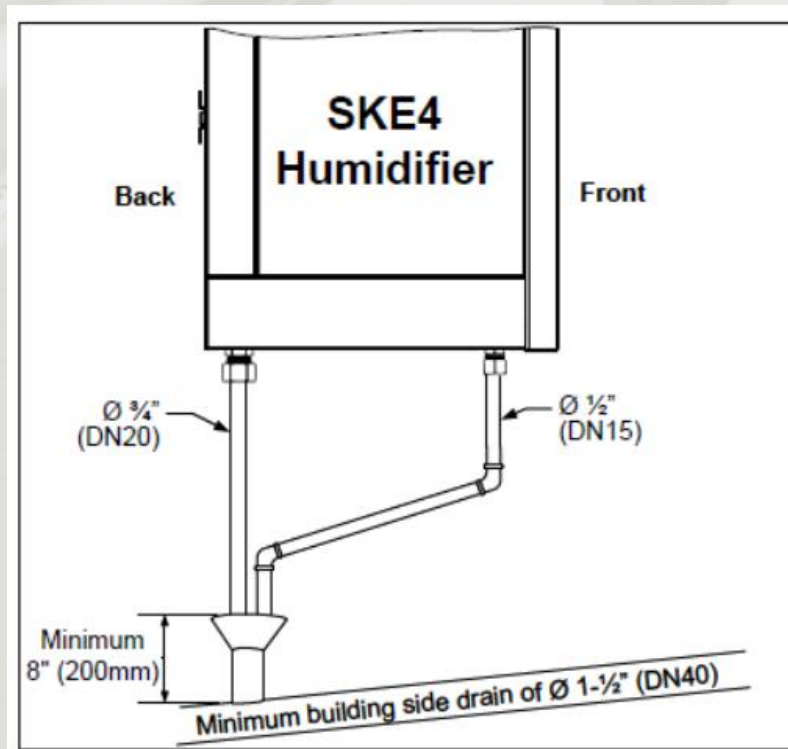


Illustration 38 - Plumbing Connection to Open Drain

Staying away from Wrong/bad installations

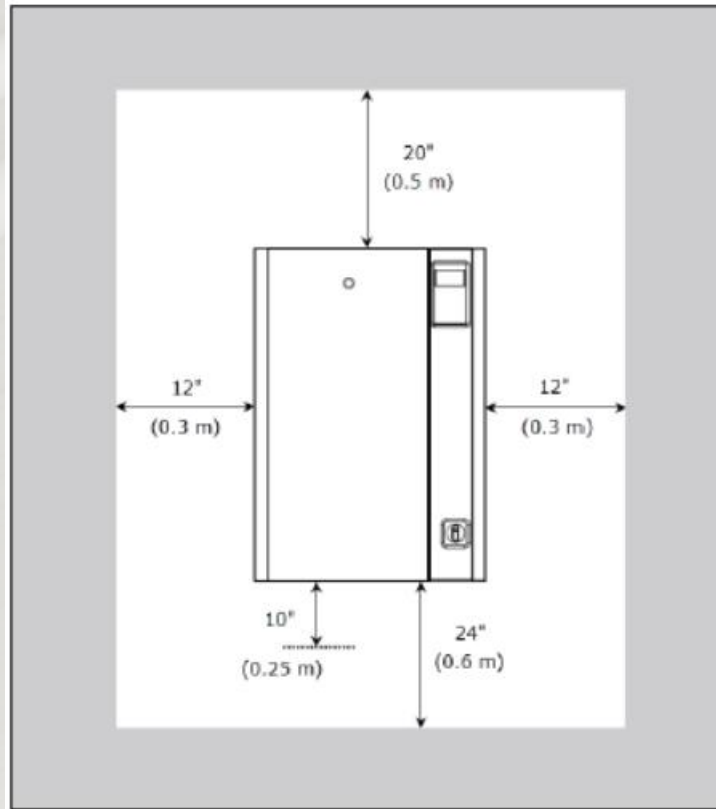


Illustration 7 - Positioning the Humidifier

Staying away from Wrong/bad installations

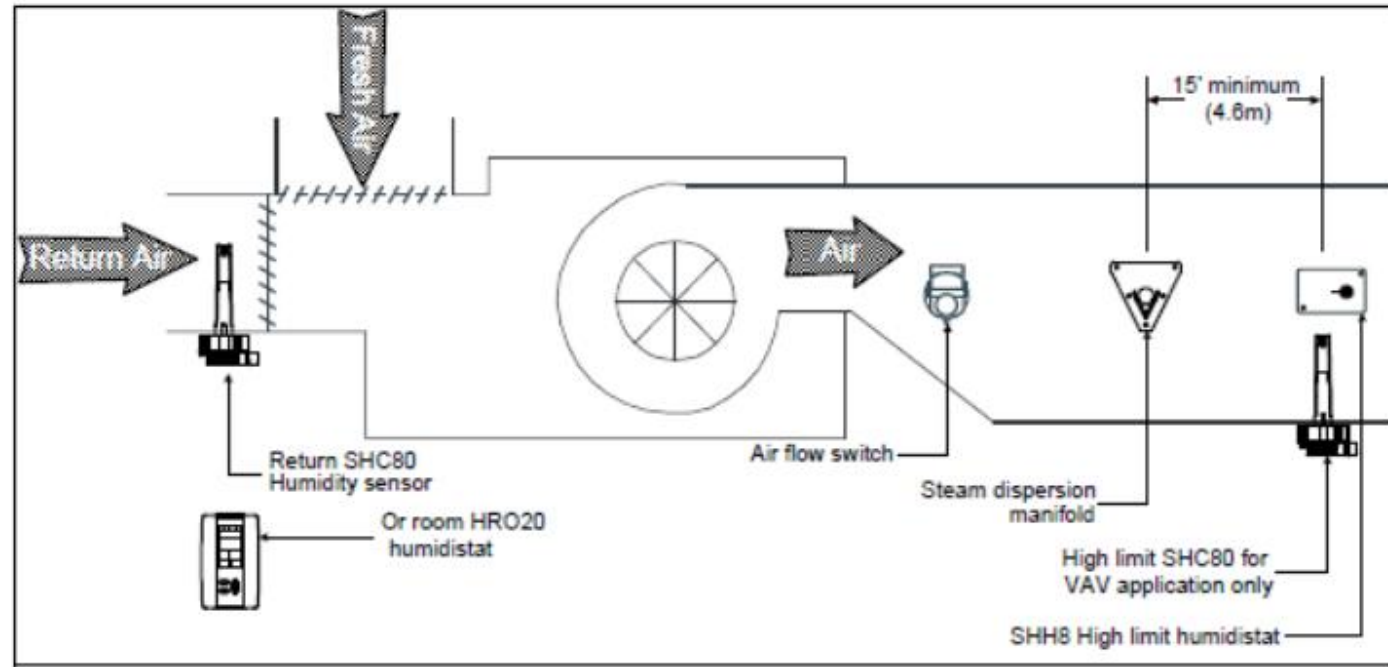


Illustration 51 - Controls Placement (Steam Dispersed into a Duct or AHU)



Staying away from Wrong/bad installations



Some examples...

Hydro-Quebec

- ✓ State owned electrical Utility company.
- ✓ Owns : 63 hydroelectric power stations and dams
- ✓ Over 300 Buildings across the province
- ✓ One City, 3 buildings, 30 humidifiers



Some examples...

Hydro-Quebec

- ✓ One City, 3 buildings, 30 humidifiers
- ✓ Humidifiers installed laps of 10 years
- ✓ All failling...



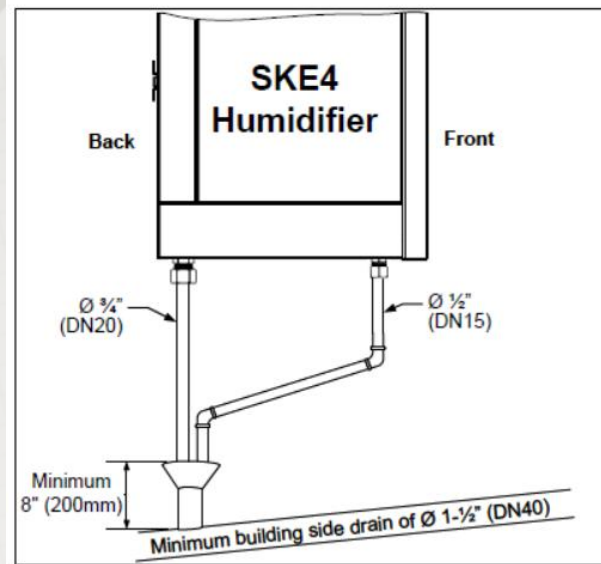


Illustration 38 - Plumbing Connection to Open Drain

Staying away from Wrong/bad installations

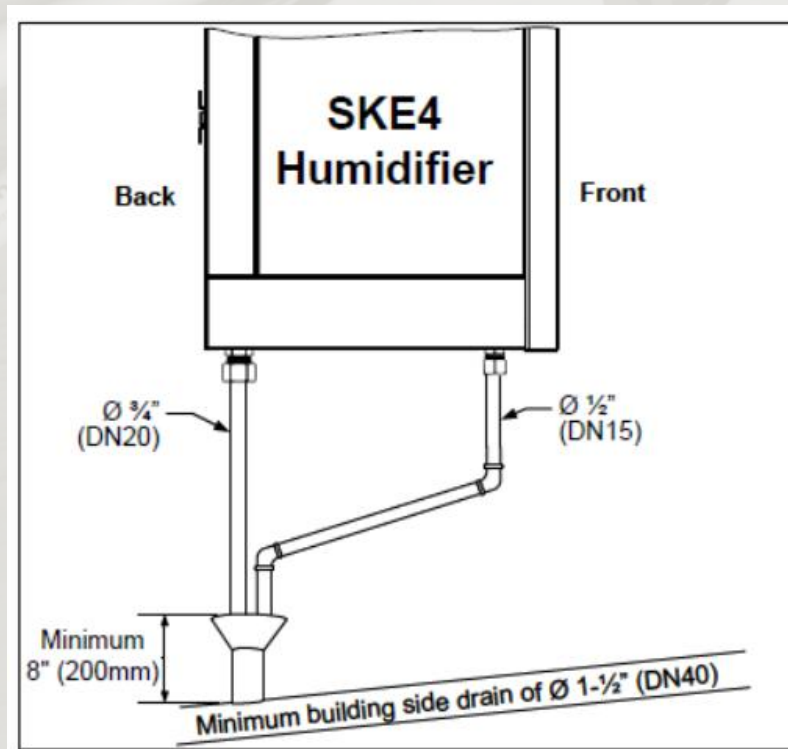
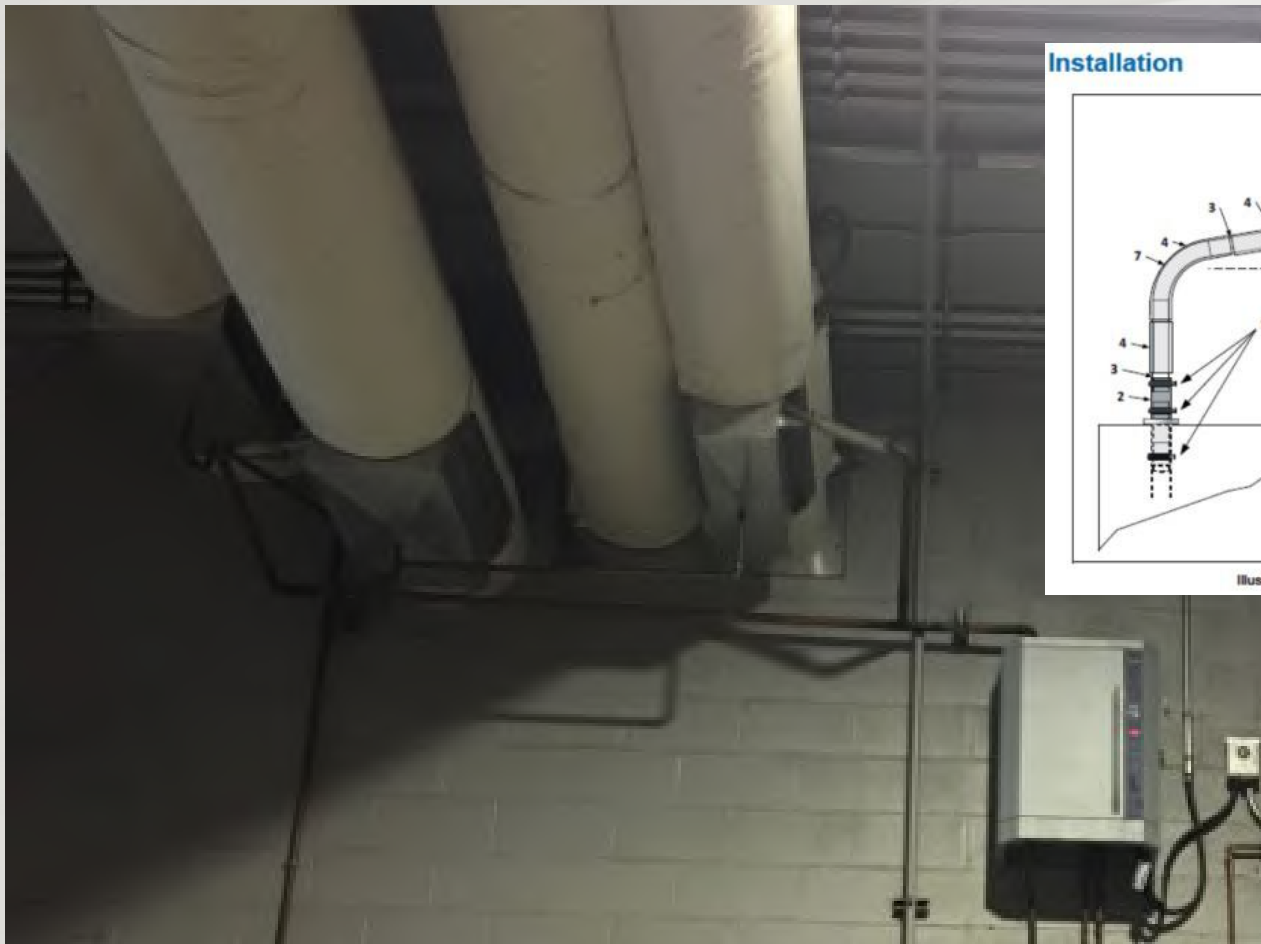


Illustration 38 - Plumbing Connection to Open Drain





Installation

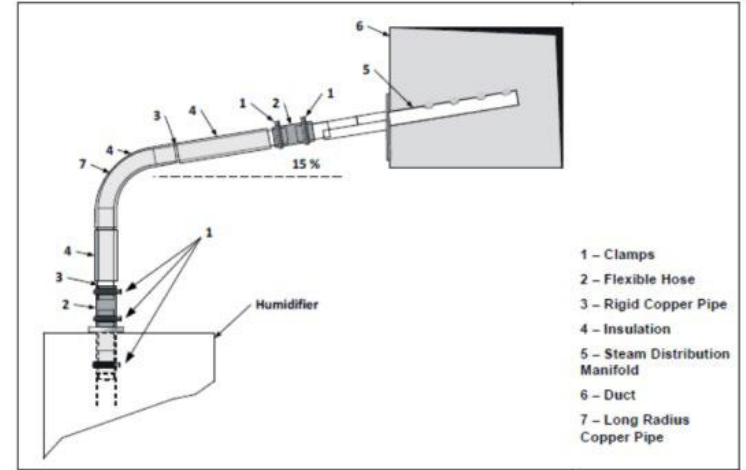
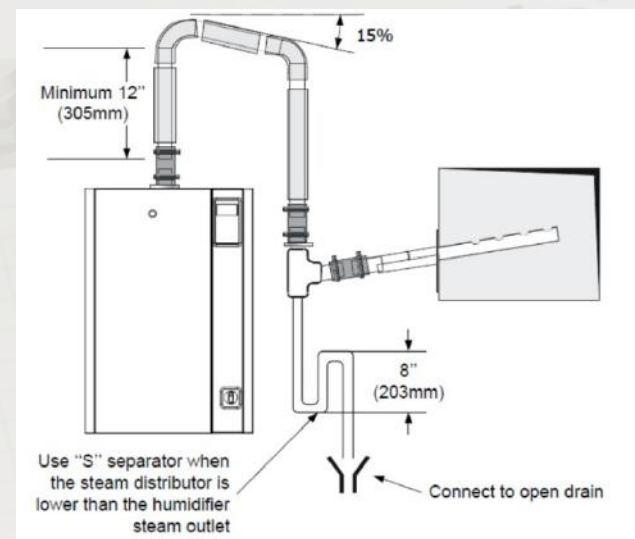


Illustration 29 - Steam Output Connections: Typical Installation













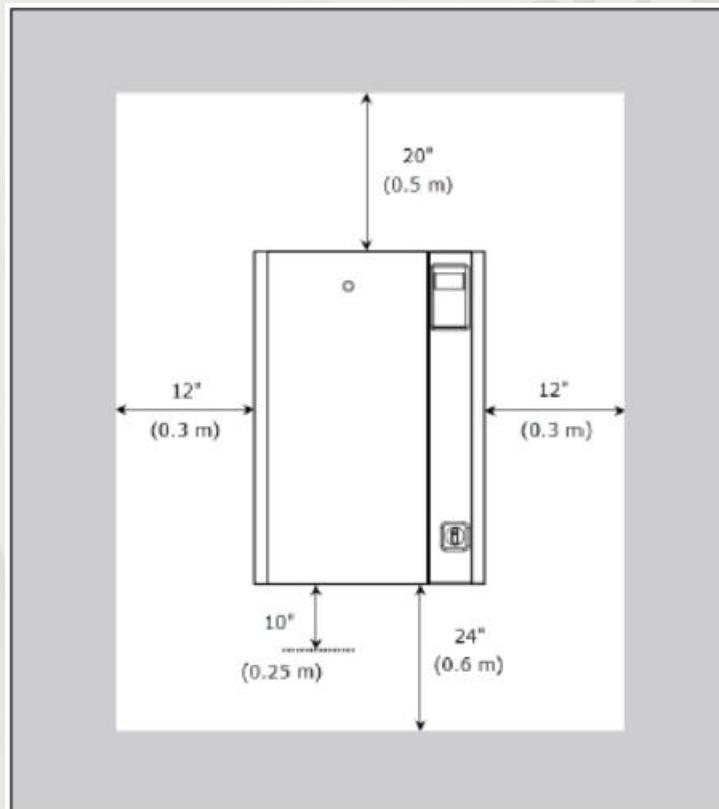


Illustration 7 - Positioning the Humidifier



Some GOOD examples...



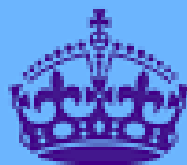


Always keep an Eye ...

✓ *The 3 Big Challenges for the proper operation of a Humidifier... while in operation...*

1. *Type of water*
2. *Poor Maintenance*
3. *Installation*





**KEEP
CALM
it's
QUESTION
TIME**

