BEST A/V SYSTEMS
HUMIDIFICATION
HUMIDIFIERS

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How To Order

BEST A/V Humidification System

SELECTING HUMIDIFIER

Following chart can help you to select the best suitable type of BEST A/V humidifier.

Energy Source	**Boiler**	SPS			
	Electricity		SEDI	ULDI	ULSW
Make-Up Water	**DI/RO**	SPS	SEDI	ULDI	
	City Water	SPS + Solenoid Valve	SEDI + Solenoid Valve		ULSW
Capacity	**2.68~134** kg/hr/unit	SPS	SEDI	ULDI	ULSW
	135~268 kg/hr/unit	SPS		ULDI	ULSW
	269~560 kg/hr/unit	SPS			
Cost Budget	**Economical**	SPS	SEDI		
	Control Priority			ULDI	ULSW

Note:

- Above listed humidification load is for each unit of humidifier.
- Model ULDI & ULSW can combine up to 4 units together and with a max. of 1072 kg/hr load.
- Model SEDI's max. load is 134 kg/hr only.
- No limit on Model SPS's humidification load..

SELECTING DISPERSION PANEL

Following chart can help you to select the best suitable type of BEST A/V dispersion panel.

Installing Method	**Vertically**	Final-Absorb (VT)	Quick-Absorb
	Horizontally	Final-Absorb (HT)	
Cost Budget	**Economical**		Quick-Absorb
	Control Priority	Final-Absorb (VT), (HT)	Quick-Absorb

Note: when AHU or DUCT height is larger than width, then installing vertically; and when the width is bigger than height, apply horizontal installation.

SELECTING THE RIGHT MODEL & CALCULATING

Below is an example given to help you in selecting the right type and capacity for Humidifier and Dispersion Panel to best match your specific need.

Conditions:

- Energy Source: electricity
- Make-Up Water: DI
- Application: AHU (air handler unit)
- 100% make-up air unit
- Heating/cooling coil bank: 2 sq m (wide) x 2 sq m (high) = 4 sq m
- Dispersion Panel Installation Method: vertically installing
- Non-wetting distance (between air blower and Quick-Absorb unit): 1 M
- Air volume: 8 CMS (cubic meter per second)
- Entering air condition (entering RH): $5^{O}C$ / 50%RH
- Desired air condition (leaving RH): $14^{O}C$ / 90%RH
- Budget: control priority

Calculating the required humidification load:

- Check on Table Quick-1 and get following
- Entering RH = $5^{O}C$ / 50%RH = 0.342 kg/s per 100 m^3/s ..... A
- Leaving RH = $14^{O}C$ / 90%RH = 1.091 kg/s per 100 m^3/s ..... B
- Then the rising moisture =B – A = 1.091 – 0.342 = 0.749 kg/s ……C
- Humidification load = Air volume x C ÷ 100m^3/s x 3600 s/hr
  = 8 m^3/s x 0.749 ÷ 100 x 3600
  = 216 kg/hr + 5~10% capacity loss
  = 227~238 kg/hr

Selecting Humidifier & Dispersion Panel:

Based on above information and check with previous sections and charts of this chapter. You may find the Model ULDI-200-8 humidifier is the best one; and can equip with either Quick-Absorb or Final-Absorb (VT) dispersion panel. Quick-Absorb is recommended for easy installing and cost saving.

How to determining the Rise RH:

The rise RH is the condition of air entering into Quick-Absorb. Check on Table Quick-1 and then

- Locate entering temperature $5^{O}C$ and read horizontally to the right at 50%RH to get moisture figure 0.342 for entering air
- Locate leaving temperature $14^{O}C$ and read horizontally to the right to get an equivalent moisture figure 0.364 to above 0.342 (entering air moisture).
- Revealed from the Table Quick-1, the %RH for 0.364 is 30%RH. So, the Rise RH is 30%.

Determining the tube spacing:

- Check on Table Quick-2
- Locate 30% (Rise %RH derived from last step) on the entering % RH section
- And move vertically upward to 90%RH (the leaving RH)
- Move horizontally to the right till reaching line A
- And then move vertically upward till reaching the level of non-wetting distance of 1M (1M=100cms)
- Read horizontally to the left, and see 150mm. Use 150mm as the dispersion tube spacing.

Double-Checking:

In order to make sure that selected 150mm tube spacing is providing sufficient capacity as needed. You need to make a recheck as followings:

- The dispersion panel face dimension (not including header) shall approximately close to the upstream heating/cooling coil bank dimension, so the dispersion panel face area is about 4 sq m.
- Check on the Table Quick-3 and get a max. of 88 kg/hr-m^2 for tube spacing of 150mm.
  That would produce (4 sq m x 88 kg/hr-m^2 =) 352 kg/hr humidification load, which would provide adequate capacity as needed of 227~238 kg/hr load.
- If above outcome figure is inadequate, then select the 110 mm tube spacing to suit the specific humidification load needed.