ASTROCUBE PERFORMANCE TESTING

Product   : AstroCube

Report No.   : RD/2020/12/001

Test Performed :Heat Exchanger Efficiency

Testing Purpose: To measure heat exchanger efficiency of AstroCube.

Prepared by: Michael See

Checked by: Yew Yang Yik

Approved by: Kok Chee Kang

Test Instruments

Extech Digital Psychrometer (RH390)

- -30.0 to -20.0°C   : ±1.5°C
- -19.9 to 70.0°C   : ±1°C
- 70.1 to 100.0°C   : ±1.5°C

Digital Air Flow Anemometer (GM8902)
Wind flow range
- CMM : 0-999900 m_3/min
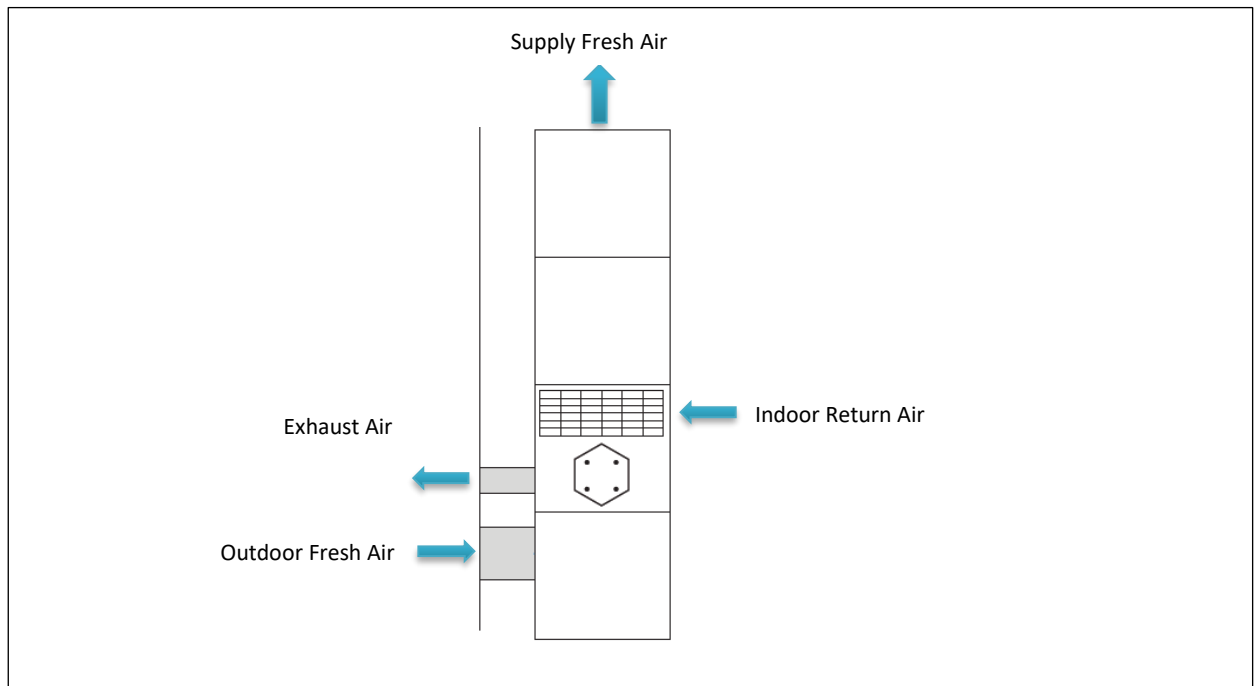- Resolution : 0.001 – 100 m_3/min

Figure 1: Schematic Diagram of Testing Setup

Figure 2: Testing Setup

AstroCube Heat Recovery Efficiency Testing

Testing Purpose   : Verify the heat recovery efficiency of installed unit.

Test Location   : AAF Meeting Room

Test Model   : AstroCube 1900x500x350mm

	T_{OFA}	T_{RA}				T_{SA}				T_{EA}			
	Ave	1	2	3	Ave	1	2	3	Ave	1	2	3	Ave
Fan Speed 1	31.20	18.80	18.60	18.70	18.70	22.60	22.70	22.80	22.70	25.40	25.50	25.40	25.43
Fan Speed 2	31.20	18.80	18.70	18.90	18.80	22.90	22.80	23.00	22.90	25.20	25.10	25.30	25.20
Fan Speed 3	31.20	19.00	18.90	18.90	18.93	23.20	23.10	23.20	23.17	24.90	24.90	24.80	24.87

where,

T_{OFA} = Outdoor Fresh Air Temperature
T_{RA} = Return Air Temperature
T_{SA} = Supply Fresh Air Temperature
T_{EA} = Exhaust Air Temperature

	Heat Recovery Efficiency (%)
Fan Speed 1	68.00
Fan Speed 2	66.94
Fan Speed 3	65.49

Sample Calculation

$$\eta = \frac{T_{OFA} - T_{SA}}{T_{OFA} - T_{RA}}$$

$$= \frac{31.2 - 22.70}{31.2 - 18.70}$$

$$= 68.00\%$$