

Air System Sizing Summary for UTAN ESP.

Project Name: Hospital Lumiar_1
Prepared by: ISEL

11-23-2014
01:05

Air System Information

Air System Name UTAN ESP.	Number of zones 1
Equipment Class CW AHU	Floor Area 10,2 m ²
Air System Type SZCAV	Location Lisbon, Portugal

Sizing Calculation Information

Zone and Space Sizing Method:

Zone L/s Sum of space airflow rates	Calculation Months Jan to Dec
Space L/s Individual peak space loads	Sizing Data Calculated

Central Cooling Coil Sizing Data

Total coil load 3,2 kW	Load occurs at Sep 1600
Sensible coil load 2,8 kW	OA DB / WB 33,4 / 21,0 °C
Coil L/s at Sep 1600 133 L/s	Entering DB / WB 33,4 / 21,0 °C
Max block L/s 133 L/s	Leaving DB / WB 15,4 / 14,3 °C
Sum of peak zone L/s 133 L/s	Coil ADP 13,4 °C
Sensible heat ratio 0,894	Bypass Factor 0,100
m ² /kW 3,2	Resulting RH 50 %
W/m ² 312,2	Design supply temp. 17,0 °C
Water flow @ 5,0 °K rise 0,15 L/s	Zone T-stat Check 1 of 1 OK
	Max zone temperature deviation 0,0 °K

Central Heating Coil Sizing Data

Max coil load 3,1 kW	Load occurs at Des Htg
Coil L/s at Des Htg 133 L/s	W/m ² 305,2
Max coil L/s 133 L/s	Ent. DB / Lvg DB 3,4 / 23,1 °C
Water flow @ 5,0 °K drop 0,15 L/s	

Humidifier Sizing Data

Max steam flow at Mar 0400 4,71 kg/hr	Air mass flow 566,90 kg/hr
Airflow Rate 133 L/s	Moisture gain ,00830 kg/kg

Supply Fan Sizing Data

Actual max L/s 133 L/s	Fan motor BHP 0,64 BHP
Standard L/s 131 L/s	Fan motor kW 0,50 kW
Actual max L/(s-m ²) 13,04 L/(s-m ²)	Fan static 1820 Pa

Return Fan Sizing Data

Actual max L/s 133 L/s	Fan motor BHP 0,27 BHP
Standard L/s 131 L/s	Fan motor kW 0,21 kW
Actual max L/(s-m ²) 13,04 L/(s-m ²)	Fan static 770 Pa

Outdoor Ventilation Air Data

Design airflow L/s 133 L/s	L/s/person 66,50 L/s/person
L/(s-m ²) 13,04 L/(s-m ²)	

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Air System Information

Air System Name **UTAN ESP.**
Equipment Class **CW AHU**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **10,2 m²**
Location **Lisbon, Portugal**

Sizing Calculation Information

Zone and Space Sizing Method:

Zone L/s **Sum of space airflow rates**
Space L/s **Individual peak space loads**

Calculation Months **Jan to Dec**
Sizing Data **Calculated**

Zone Sizing Data

Zone Name	Maximum Cooling Sensible (kW)	Design Air Flow (L/s)	Minimum Air Flow (L/s)	Time of Peak Load	Maximum Heating Load (kW)	Zone Floor Area (m ²)	Zone L/(s-m ²)
Zone 1	0,8	133	133	Jul 1600	0,4	10,2	13,04

Zone Terminal Sizing Data

No Zone Terminal Sizing Data required for this system.

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m ²)	Space L/(s-m ²)
Zone 1							
14 - Esterilização	1	0,5	Jul 1100	74	0,3	6,1	12,13
15 - Área de Limpos	1	0,2	Jul 1700	59	0,1	4,1	14,39

Ventilation Sizing Summary for UTAN ESP.

Project Name: Hospital Lumiar_1
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11-23-2014
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1. Summary

Ventilation Sizing Method **Sum of Space OA Airflows**
 Design Ventilation Airflow Rate **133 L/s**

2. Space Ventilation Analysis Table

Zone Name / Space Name	Mult.	Floor Area (m ²)	Maximum Occupants	Maximum Supply Air (L/s)	Required Outdoor Air (L/s/person)	Required Outdoor Air (L/(s-m ²))	Required Outdoor Air (L/s)	Required Outdoor Air (% of supply)	Uncorrected Outdoor Air (L/s)
Zone 1									
14 - Esterilização	1	6,1	1,0	74,0	0,00	0,00	74,0	0,0	74,0
15 - Área de Limpos	1	4,1	1,0	59,0	0,00	0,00	59,0	0,0	59,0
Totals (incl. Space Multipliers)				133,0					133,0