

Air System Sizing Summary for AC-9

Project Name: Replace AC-9 Server Equipment
 Prepared by: Air Systems Engineering

08/14/2023
 12:02PM

Air System Information

Air System Name AC-9	Number of zones 1
Equipment Class SPLT AHU	Floor Area 150.0 ft ²
Air System Type SZCAV	Location Tacoma, Washington

Sizing Calculation Information

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

Central Cooling Coil Sizing Data

Total coil load 2.8 Tons	Load occurs at Jun 1000
Total coil load 33.8 MBH	OA DB / WB 72.4 / 60.7 °F
Sensible coil load 33.8 MBH	Entering DB / WB 76.0 / 46.2 °F
Coil CFM at Jun 1000 1861 CFM	Leaving DB / WB 58.9 / 37.6 °F
Max block CFM 1861 CFM	Coil ADP 57.1 °F
Sum of peak zone CFM 1861 CFM	Bypass Factor 0.100
Sensible heat ratio 1.000	Resulting RH 0 %
CFM/Ton 660.0	Design supply temp. 58.0 °F
ft ² /Ton 53.2	Zone T-stat Check 1 of 1 OK
BTU/(hr-ft ²) 225.6	Max zone temperature deviation 0.0 °F
Water flow @ 10.0 °F rise N/A	

Central Heating Coil Sizing Data

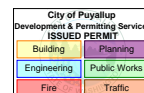
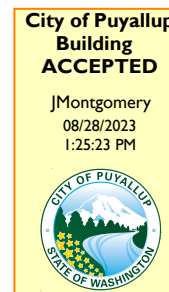
Max coil load 2.6 MBH	Load occurs at Des Htg
Coil CFM at Des Htg 1861 CFM	BTU/(hr-ft ²) 17.1
Max coil CFM 1861 CFM	Ent. DB / Lvg DB 70.3 / 71.6 °F
Water flow @ 20.0 °F drop N/A	

Supply Fan Sizing Data

Actual max CFM 1861 CFM	Fan motor BHP 0.00 BHP
Standard CFM 1840 CFM	Fan motor kW 0.00 kW
Actual max CFM/ft ² 12.41 CFM/ft ²	Fan static 0.00 in wg

Outdoor Ventilation Air Data

Design airflow CFM 0 CFM	CFM/person 0.00 CFM/person
CFM/ft ² 0.00 CFM/ft ²	



FULL SIZED LEDGIBLE PLANS ARE REQUIRED TO BE PROVIDED BY THE PERMITTEE ON SITE FOR ALL INSPECTIONS

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Zone Sizing Summary for AC-9

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Air System Information

Air System Name **AC-9**
 Equipment Class **SPLT AHU**
 Air System Type **SZCAV**

Number of zones **1**
 Floor Area **150.0** ft²
 Location **Tacoma, Washington**

Sizing Calculation Information

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

Zone CFM Sizing **Sum of space airflow rates**
 Space CFM Sizing **Individual peak space loads**

Zone Terminal Sizing Data

Zone Name	Design Supply Airflow (CFM)	Minimum Supply Airflow (CFM)	Zone CFM/ft ²	Reheat Coil Load (MBH)	Reheat Coil Water gpm @ 20.0 °F	Zone Htg Unit Coil Load (MBH)	Zone Htg Unit Water gpm @ 20.0 °F	Mixing Box Fan Airflow (CFM)
Zone 1	1861	1861	12.41	0.0	-	0.0	-	0

Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (MBH)	Time of Peak Sensible Cooling Load	Zone Heating Load (MBH)	Zone Floor Area (ft ²)
Zone 1	33.8	Jun 1000	2.4	150.0

Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (MBH)	Time of Peak Sensible Load	Air Flow (CFM)	Heating Load (MBH)	Floor Area (ft ²)	Space CFM/ft ²
Zone 1 Server Room	1	33.8	Jun 1000	1861	2.4	150.0	12.41

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Air System Design Load Summary for AC-9

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jun 1000			HEATING DATA AT DES HTG		
	COOLING OA DB / WB 72.4 °F / 60.7 °F			HEATING OA DB / WB 18.0 °F / 14.8 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	40 ft²	2123	-	40 ft²	-	-
Wall Transmission	248 ft²	324	-	248 ft²	580	-
Roof Transmission	150 ft²	280	-	150 ft²	282	-
Window Transmission	40 ft²	-83	-	40 ft²	1223	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	150 ft²	0	-	150 ft²	357	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	225 W	768	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	8900 W	30367	-	0	0	-
People	0	0	0	0	0	0
Infiltration	-	0	0	-	0	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	0%	0	0
>> Total Zone Loads	-	33778	0	-	2442	0
Zone Conditioning	-	33842	0	-	2562	0
Plenum Wall Load	0%	0	-	0	0	-
Plenum Roof Load	0%	0	-	0	0	-
Plenum Lighting Load	0%	0	-	0	0	-
Return Fan Load	1861 CFM	0	-	1861 CFM	0	-
Ventilation Load	0 CFM	0	0	0 CFM	0	0
Supply Fan Load	1861 CFM	0	-	1861 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	33842	0	-	2562	0
Central Cooling Coil	-	33842	0	-	0	0
Central Heating Coil	-	0	-	-	2562	-
>> Total Conditioning	-	33842	0	-	2562	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

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