

Air System Sizing Summary for FCU-1

Project Name: 2023 Prepared by:

Air System Information

Air System Name **FCU-1**
Equipment Class **PKG VERT**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **1568.6** ft²
Location **Toronto, Ontario**

Sizing Calculation Information

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

Zone CFM Sizing **Peak zone sensible load**
Space CFM Sizing **Individual peak space loads**

Central Cooling Coil Sizing Data

Total coil load **1.4** Tons
Total coil load **17.0** MBH
Sensible coil load **15.5** MBH
Coil CFM at Aug 1400 **937** CFM
Max block CFM **937** CFM
Sum of peak zone CFM **937** CFM
Sensible heat ratio **0.910**
ft²/Ton **1104.7**
BTU/(hr-ft²) **10.9**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Aug 1400**
OA DB / WB **89.4 / 73.9** °F
Entering DB / WB **76.2 / 65.5** °F
Leaving DB / WB **60.6 / 59.6** °F
Coil ADP **58.9** °F
Bypass Factor **0.100**
Resulting RH **58** %
Design supply temp. **54.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **44.6** MBH
Coil CFM at Des Htg **937** CFM
Max coil CFM **937** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr-ft²) **28.4**
Ent. DB / Lvg DB **64.3 / 109.3** °F

Supply Fan Sizing Data

Actual max CFM **937** CFM
Standard CFM **918** CFM
Actual max CFM/ft² **0.60** CFM/ft²

Fan motor BHP **0.00** BHP
Fan motor kW **0.00** kW
Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **85** CFM
CFM/ft² **0.05** CFM/ft²

CFM/person **84.80** CFM/person

Air System Design Load Summary for FCU-1

Project Name Prepared by:

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Aug 1400 COOLING OA DB / WB 89.4 °F / 73.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -10.0 °F / -10.0 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	555 ft²	7137	-	555 ft²	-	-
Wall Transmission	1603 ft²	1043	-	1603 ft²	4253	-
Roof Transmission	0 ft²	0	-	0 ft²	0	-
Window Transmission	555 ft²	1488	-	555 ft²	11378	-
Skylight Transmission	0 ft²	0	-	0 ft²	0	-
Door Loads	189 ft²	3410	-	189 ft²	4225	-
Floor Transmission	677 ft²	0	-	677 ft²	3872	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	0 W	0	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	223 W	714	-	0	0	-
People	0	63	0	0	0	0
Infiltration	-	0	0	-	10515	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	10%	3424	0
>> Total Zone Loads	-	13856	0	-	37667	0
Zone Conditioning	-	14204	0	-	37224	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	937 CFM	0	-	937 CFM	0	-
Ventilation Load	85 CFM	1298	1536	85 CFM	7333	0
Supply Fan Load	937 CFM	0	-	937 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	15502	1536	-	44557	0
Central Cooling Coil	-	15502	1537	-	0	0
Central Heating Coil	-	0	-	-	44557	-
>> Total Conditioning	-	15502	1537	-	44557	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for FCU-2

Project Name: Prepared by:

Air System Information

Air System Name **FCU-2**
Equipment Class **PKG VERT**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **511.5** ft²
Location **Toronto, Ontario**

Sizing Calculation Information

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

Zone CFM Sizing **Peak zone sensible load**
Space CFM Sizing **Coincident space loads**

Central Cooling Coil Sizing Data

Total coil load **0.7** Tons
Total coil load **8.0** MBH
Sensible coil load **7.0** MBH
Coil CFM at Jul 1400 **334** CFM
Max block CFM **334** CFM
Sum of peak zone CFM **334** CFM
Sensible heat ratio **0.870**
ft²/Ton **765.8**
BTU/(hr-ft²) **15.7**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Jul 1400**
OA DB / WB **89.4 / 73.9** °F
Entering DB / WB **76.9 / 64.1** °F
Leaving DB / WB **57.2 / 56.0** °F
Coil ADP **55.0** °F
Bypass Factor **0.100**
Resulting RH **50** %
Design supply temp. **54.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **16.9** MBH
Coil CFM at Des Htg **334** CFM
Max coil CFM **334** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr-ft²) **33.1**
Ent. DB / Lvg DB **61.3 / 109.3** °F

Supply Fan Sizing Data

Actual max CFM **334** CFM
Standard CFM **327** CFM
Actual max CFM/ft² **0.65** CFM/ft²

Fan motor BHP **0.00** BHP
Fan motor kW **0.00** kW
Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **42** CFM
CFM/ft² **0.08** CFM/ft²

CFM/person **21.20** CFM/person

Air System Design Load Summary for FCU-2

Project Name: Prepared by:

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1400 COOLING OA DB / WB 89.4 °F / 73.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -10.0 °F / -10.0 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	207 ft²	3821	-	207 ft²	-	-
Wall Transmission	789 ft²	494	-	789 ft²	1890	-
Roof Transmission	504 ft²	1088	-	504 ft²	1263	-
Window Transmission	193 ft²	518	-	193 ft²	3957	-
Skylight Transmission	14 ft²	88	-	14 ft²	675	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	0 W	0	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	76 W	266	-	0	0	-
People	0	125	0	0	0	0
Infiltration	-	0	0	-	4425	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	10%	1221	0
>> Total Zone Loads	-	6399	0	-	13429	0
Zone Conditioning	-	6328	0	-	13272	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	334 CFM	0	-	334 CFM	0	-
Ventilation Load	42 CFM	642	1044	42 CFM	3666	0
Supply Fan Load	334 CFM	0	-	334 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	6970	1044	-	16938	0
Central Cooling Coil	-	6970	1045	-	0	0
Central Heating Coil	-	0	-	-	16938	-
>> Total Conditioning	-	6970	1045	-	16938	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		

Air System Sizing Summary for FCU-3

Project Name: Prepared by:

Air System Information

Air System Name **FCU-3**
Equipment Class **PKG VERT**
Air System Type **SZCAV**

Number of zones **1**
Floor Area **430.0** ft²
Location **Toronto, Ontario**

Sizing Calculation Information

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

Zone CFM Sizing **Peak zone sensible load**
Space CFM Sizing **Coincident space loads**

Central Cooling Coil Sizing Data

Total coil load **0.6** Tons
Total coil load **6.7** MBH
Sensible coil load **5.6** MBH
Coil CFM at Jul 1400 **243** CFM
Max block CFM **243** CFM
Sum of peak zone CFM **243** CFM
Sensible heat ratio **0.830**
ft²/Ton **771.9**
BTU/(hr-ft²) **15.5**
Water flow @ 10.0 °F rise **N/A**

Load occurs at **Jul 1400**
OA DB / WB **89.4 / 73.9** °F
Entering DB / WB **77.5 / 64.2** °F
Leaving DB / WB **55.9 / 54.7** °F
Coil ADP **53.5** °F
Bypass Factor **0.100**
Resulting RH **48** %
Design supply temp. **54.0** °F
Zone T-stat Check **1 of 1** OK
Max zone temperature deviation **0.0** °F

Central Heating Coil Sizing Data

Max coil load **13.5** MBH
Coil CFM at Des Htg **243** CFM
Max coil CFM **243** CFM
Water flow @ 20.0 °F drop **N/A**

Load occurs at **Des Htg**
BTU/(hr-ft²) **31.3**
Ent. DB / Lvg DB **57.6 / 110.0** °F

Supply Fan Sizing Data

Actual max CFM **243** CFM
Standard CFM **238** CFM
Actual max CFM/ft² **0.57** CFM/ft²

Fan motor BHP **0.00** BHP
Fan motor kW **0.00** kW
Fan static **0.00** in wg

Outdoor Ventilation Air Data

Design airflow CFM **42** CFM
CFM/ft² **0.10** CFM/ft²

CFM/person **16.96** CFM/person

Air System Design Load Summary for FCU-3

Project Name: Prepared by:

	DESIGN COOLING			DESIGN HEATING		
	COOLING DATA AT Jul 1400 COOLING OA DB / WB 89.4 °F / 73.9 °F			HEATING DATA AT DES HTG HEATING OA DB / WB -10.0 °F / -10.0 °F		
ZONE LOADS	Details	Sensible (BTU/hr)	Latent (BTU/hr)	Details	Sensible (BTU/hr)	Latent (BTU/hr)
Window & Skylight Solar Loads	141 ft²	2816	-	141 ft²	-	-
Wall Transmission	657 ft²	453	-	657 ft²	1663	-
Roof Transmission	418 ft²	904	-	418 ft²	1049	-
Window Transmission	129 ft²	346	-	129 ft²	2645	-
Skylight Transmission	12 ft²	74	-	12 ft²	562	-
Door Loads	0 ft²	0	-	0 ft²	0	-
Floor Transmission	0 ft²	0	-	0 ft²	0	-
Partitions	0 ft²	0	-	0 ft²	0	-
Ceiling	0 ft²	0	-	0 ft²	0	-
Overhead Lighting	0 W	0	-	0	0	-
Task Lighting	0 W	0	-	0	0	-
Electric Equipment	17 W	105	-	0	0	-
People	0	150	0	0	0	0
Infiltration	-	0	0	-	2967	0
Miscellaneous	-	0	0	-	0	0
Safety Factor	0% / 0%	0	0	10%	889	0
>> Total Zone Loads	-	4848	0	-	9775	0
Zone Conditioning	-	4905	0	-	9800	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	243 CFM	0	-	243 CFM	0	-
Ventilation Load	42 CFM	646	1134	42 CFM	3674	0
Supply Fan Load	243 CFM	0	-	243 CFM	0	-
Space Fan Coil Fans	-	0	-	-	0	-
Duct Heat Gain / Loss	0%	0	-	0%	0	-
>> Total System Loads	-	5551	1134	-	13474	0
Central Cooling Coil	-	5551	1134	-	0	0
Central Heating Coil	-	0	-	-	13474	-
>> Total Conditioning	-	5551	1134	-	13474	0
Key:	Positive values are clg loads Negative values are htg loads			Positive values are htg loads Negative values are clg loads		