

EMS Heat Loss/Heat Gain Calculation

Company:	EGI-Engineering Great Ideas, Inc.
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Customer:	Family of God Methodist Church
Address:	5601 16th Avenue East Palmetto, Florida 34221
Phone:	
Date:	2-26-19

This HVAC load calculation has been performed using sound engineering principles as prescribed by Manual J seventh and eighth abridged editions and ASHRAE Fundamentals. Duct sizing has been performed as prescribed by Manual D.

1. Design Conditions

	Indoor	Outdoor	Temp. Diff.
Winter	74	50	24
Summer	72	95	23

Front of building is facing:
South East

2. How would you describe the summer humidity in your area? Very Humid 60 Grains difference

3. Volume and tightness

Volume of building or zone (cu.ft.):	90000	
How tight is building:	Semi tight	0.44
Building or zone area:	5001 - 10000	0.17
Number of stories:	1	1

4. Refrigeration with remote condenser

	BTUH capacity	Load (BTUH/hr)
Open display, no doors:		-0
Reach-in with doors:		-0
Total credit for remote refrigeration:		-0

5. Infiltration and Ventilation

Air change / hr:	Summer	Winter	Load (BTUH/hr):	Heat (sen)	Cool (sen)	Latent
	0.17	0.39		15300	6598	9858

Ventilation:	CFM	Efficiency	Heat (sen)	Cool (sen)	Latent
Mechanical ventilation:			0	0	0
Hoods with make-up air:			0	0	0
Energy recovery system:			0	0	0

Door traffic:	Heat (sen)	Cool (sen)	Latent
Area (sq.ft.) of all customer entrance doors:			
number of entrances and exits per hour:			
	0	0	0

Total infiltration / ventilation load (btuh):	15300	6598	9858
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Internal Loads:		Heat (sen)	Latent
People	Number of people		
sedentary:		0	0
moderately active:	135	50625	81000
very active:		0	0
Total people load (btuh):		50625	81000

Lighting	Total watts	Heat (sen)	Latent
incandescent:		0	
florescent:	3306	13885	
Total lighting load:		13885	

Motors (horse power)	Total HP	Average min/hr run time	Heat (sen)	Latent
1/20 - 1/6 HP			0	
1/4 - 1/2 HP			0	
3/4 - 2 HP			0	
3 - 250 HP			0	

Appliances load:	7500	
Office equipment:	7500	
Other loads:		

Total appliance and equipment load:	15000	0
Total latent load (btuh):		90858

6. Overhang characteristics (optional)

	East	West	S/SE/SW
Distance of overhang from top of window (Ft.)	4	4	4
Length of overhang	0.1667	0.1667	0.1667

7. Solar gain through glass

Facing	Total area - Sq.Ft.	Type of glass	HTM	Linear ft.	Unshaded	Shaded	BTUH
N/Shaded		-- Select --		Below OH		0	
NE/NW		-- Select --			0		0
South		-- Select --			0	0	0
SE/SW	24	Trpl or low-E	56		24	0	1344
East		-- Select --			0	0	0
West		-- Select --			0	0	0
Skylight		-- Select --					0
Total North and Shaded						0	0
Total Solar Gain							1344
Adjust for tinted or reflective window coating?				No	1		1344

8. Ducts/Pipes

Location:	Trunk and branches in attic				
Attic Temp.	Insulation		Leakage		Area
130	R-6	1	sealed	1	1680
Duct gain:	0.351	Duct loss:	0.137		

9. Load Calculation

Elements of Load	Insulation / R-value	Area/lin.ft.	U-value	Heat Loss	Heat Gain
Gross Wall		4800		Glass solar gain	1344
Glass 1	Trpl or low-E	24	0.42	242	
Glass 2	-- Select --			0	
Skylight	-- Select --	0		0	
Doors	Insulated or Storm	147	0.4	1411	1352
Net walls	R-11	4629	0.08	8888	8517
Ceilings	R-19	7500	0.055	9900	18562
Floors	-- Select --			0	0
Open floors	-- Select --			0	0
Slab floors	No Insulation	7500	0.8	144000	0
Infiltration and Ventilation		90000		15300	6598
	People				50625
	Appliances and Equipment				15000
	Lighting				13885
	Sub Total			179741	115885
	Refrigeration Credit				-0
	Duct Loss/Gain			24660	40652
	Sensible Load			204401	156537
	Latent Load				90858
	TOTAL BTUH			204401	247395

Summary		
	BTUH	Tons
Total heating load	204401	
Total cooling load	247395	20.6

