Residential System Sizing Calculation

Summary

Micah & Alisha Cady
413 SW Highpoint Glenn
Lake City, FL 32024

Project Title:
Cady Garage

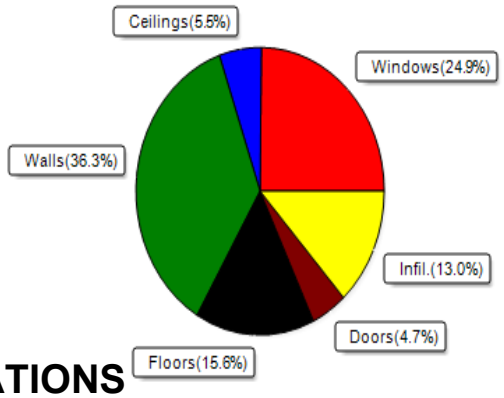
10/8/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)					
Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)					
Winter design temperature(MJ8 99%/Cu)	33	F	Summer design temperature(MJ8 99%/Cu)	99	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	37	F	Summer temperature difference	24	F
Total heating load calculation	**7270**	**Btuh**	**Total cooling load calculation**	**10832**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	108.1	7858	Sensible (SHR = 0.70)	86.8	8330
Heat Pump + Auxiliary(0.0kW)	108.1	7858	Latent	288.3	3570
			Total (Electric Heat Pump)	109.9	11900

WINTER CALCULATIONS

Winter Heating Load (for 796 sqft)

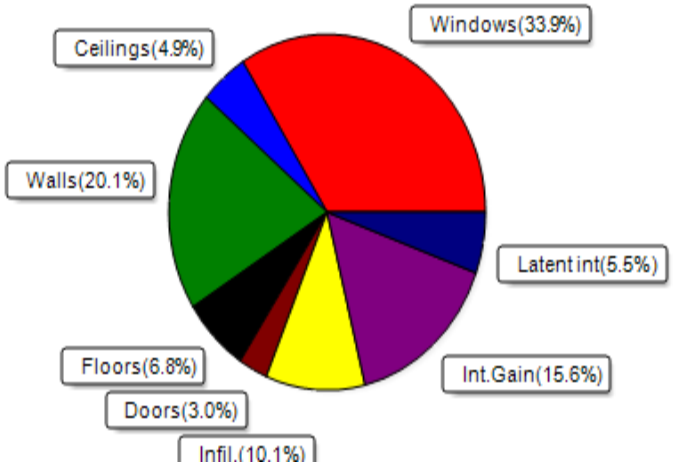
Load component			Load	
Window total	136	sqft	1812	Btuh
Wall total	804	sqft	2640	Btuh
Door total	20	sqft	340	Btuh
Ceiling total	796	sqft	400	Btuh
Floor total	796	sqft	1134	Btuh
Infiltration	23	cfm	943	Btuh
Duct loss			0	Btuh
Subtotal			**7270**	**Btuh**
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			**7270**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 796 sqft)

Load component			Load	
Window total	136	sqft	3676	Btuh
Wall total	804	sqft	2177	Btuh
Door total	20	sqft	322	Btuh
Ceiling total	796	sqft	530	Btuh
Floor total			740	Btuh
Infiltration	17	cfm	459	Btuh
Internal gain			1690	Btuh
Duct gain			0	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			**9593**	**Btuh**
Latent gain(ducts)			0	Btuh
Latent gain(infiltration)			638	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			600	Btuh
Total latent gain			**1238**	**Btuh**
TOTAL HEAT GAIN			**10832**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 10 / 08 / 2024

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Micah & Alisha Cady
413 SW Highpoint Glenn
Lake City, FL 32024

Project Title:
Cady Garage
Building Type: User

10/8/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 37.0 °F (MJ8 99%/Cu)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House

Window	Panes/Type	Frame	U	Orientation	Area(sqft) X	HTM=	Load
1	2, NFRC 0.25	Vinyl	0.36	E	50.0	13.3	666 Btuh
2	2, NFRC 0.25	Vinyl	0.36	N	15.0	13.3	200 Btuh
3	2, NFRC 0.25	Vinyl	0.36	W	50.0	13.3	666 Btuh
4	2, NFRC 0.25	Vinyl	0.36	W	6.0	13.3	80 Btuh
5	2, NFRC 0.25	Vinyl	0.36	S	15.0	13.3	200 Btuh
	Window Total				136.0(sqft)		1812 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	210	3.28	690 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	185	3.28	608 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	224	3.28	736 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	185	3.28	608 Btuh
	Wall Total				804(sqft)		2640 Btuh
Doors	Type	Storm	Ueff.		Area X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20	17.0	340 Btuh
	Door Total				20(sqft)		340Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area X	HTM=	Load
1	Sloped ce/D/Shing		(0.014)	38.0/38.0	796	0.50	400 Btuh
	Ceiling Total				796(sqft)		400Btuh
Floors	Type		Ueff.	R-Value	Size X	HTM=	Load
1	Stem/Crawlsp(Carpet)(v)		(0.049)	19.0/0.0	796.0 sqft	1.4	1134 Btuh
	Floor Total				796 sqft		1134 Btuh
					Envelope Subtotal:		6326 Btuh

Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.22	6368	1.00	23.3	943 Btuh
Duct load	NA, R0.0, Supply(), Return()					(DLM of 0.000)	0 Btuh
All Zones				**Sensible Subtotal All Zones**			**7270 Btuh**

Manual J Winter Calculations

Residential Load - Component Details (continued)

Micah & Alisha Cady
413 SW Highpoint Glenn
Lake City, FL 32024

Project Title:
Cady Garage
Building Type: User

10/8/2024

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	7270 Btuh 0 Btuh 7270 Btuh

EQUIPMENT

1. Electric Heat Pump	#	7858 Btuh

Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)
U - (Window U-Factor)
HTM - (ManualJ Heat Transfer Multiplier)

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System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Micah & Alisha Cady
413 SW Highpoint Glenn
Lake City, FL 32024

Project Title:
Cady Garage

10/8/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 54gr.

Temperature Difference: 24.0F(MJ8 99%/Cu)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Whole House

Window	Type* Panes	SHGC	U	InSh	IS	Ornt	Overhang Len	Hgt	Window Area(sqft) Gross	Shaded	Unshaded	HTM Shaded	Unshaded	Load
1	2 NFRC	0.25, 0.36		No	No	E	1.0ft.	0.5ft.	50.0	3.3	46.7	14	33	1575 Btuh
2	2 NFRC	0.25, 0.36		No	No	N	1.0ft.	4.0ft.	15.0	0.0	15.0	14	14	208 Btuh
3	2 NFRC	0.25, 0.36		No	No	W	1.5ft.	0.5ft.	50.0	7.4	42.5	14	33	1497 Btuh
4	2 NFRC	0.25, 0.36		No	No	W	1.5ft.	0.5ft.	6.0	1.5	4.5	14	33	168 Btuh
5	2 NFRC	0.25, 0.36		No	No	S	1.0ft.	4.0ft.	15.0	5.0	10.0	14	16	228 Btuh
	Window Total								136 (sqft)					3676 Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load
1	Frame - Wood - Ext	0.09	13.0/0.0	210.0	2.7	568 Btuh
2	Frame - Wood - Ext	0.09	13.0/0.0	185.0	2.7	501 Btuh
3	Frame - Wood - Ext	0.09	13.0/0.0	224.0	2.7	606 Btuh
4	Frame - Wood - Ext	0.09	13.0/0.0	185.0	2.7	501 Btuh
	Wall Total			804 (sqft)		2177 Btuh

Doors	Type	Area (sqft)	HTM	Load
1	Insulated - Exterior	20.0	16.1	322 Btuh
	Door Total	20 (sqft)		322 Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load
1	Vented Attic/DarkShingle/RB	0.014	38.0/38.0	796.0	0.67	530 Btuh
	Ceiling Total			796 (sqft)		530 Btuh

Floors	Type	R-Value	Size	HTM	Load
1	Stem/Crawlsp(Carpet)(v)	19.0	796 (sqft)	0.9	740 Btuh
	Floor Total		796.0 (sqft)		740 Btuh
			Envelope Subtotal:		7444 Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load
	Natural	0.16	6368	1	17.5	459 Btuh

Internal gain	Occupants	Btuh/occupant		Appliance	Load
	3	X 230	+	1000	1690 Btuh
			Sensible Envelope Load:		9593 Btuh
Duct load	NA, Supply(R0.0-None), Return(R0.0-None)		(DGM of 0.000)		0 Btuh
			Sensible Load All Zones		**9593 Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

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Lake City, FL 32024

Project Title: Cady Garage

Climate:FL_GAINESVILLE_REGIONAL_A

10/8/2024

WHOLE HOUSE TOTALS

	Sensible Envelope Load All Zones	**9593 Btuh**
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	**9593 Btuh**
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
Whole House	**Total sensible gain**	**9593 Btuh**
Totals for Cooling	Latent infiltration gain (for 54 gr. humidity difference)	638 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (3.0 people @ 200 Btuh per person)	600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**1238 Btuh**
	TOTAL GAIN	**10832 Btuh**

EQUIPMENT

1. Central Unit	#	11900 Btuh

*Key: Window types (Panes - Number and type of panes of glass)
(SHGC - Shading coefficient of glass as SHGC numerical value)
(U - Window U-Factor)
(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))
- For Blinds: Assume medium color, half closed
For Draperies: Assume medium weave, half closed
For Roller shades: Assume translucent, half closed
(IS - Insect screen: none(N), Full(F) or Half(½))
(Ornt - compass orientation)

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