Residential System Sizing Calculation

Summary

Project Title:
Caleb Bundy

, FL

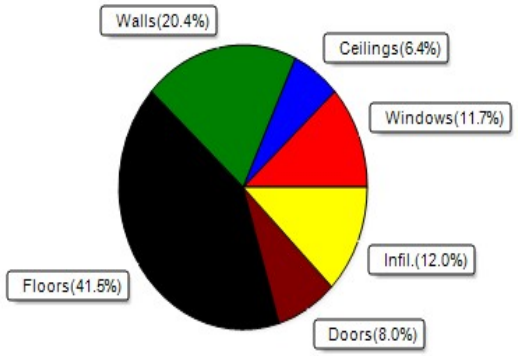
2/27/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 ft.) Temp Range(M) Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)					
Winter design temperature(TMY3 99%)	30	F	Summer design temperature(TMY3 99%)	94	F
Winter setpoint	70	F	Summer setpoint	75	F
Winter temperature difference	40	F	Summer temperature difference	19	F
Total heating load calculation	**22865**	**Btuh**	**Total cooling load calculation**	**18365**	**Btuh**
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	209.9	48000	Sensible (SHR = 0.75)	237.8	36000
Heat Pump + Auxiliary(0.0kW)	209.9	48000	Latent	372.3	12000
			Total (Electric Heat Pump)	261.4	48000

WINTER CALCULATIONS

Winter Heating Load (for 2423 sqft)

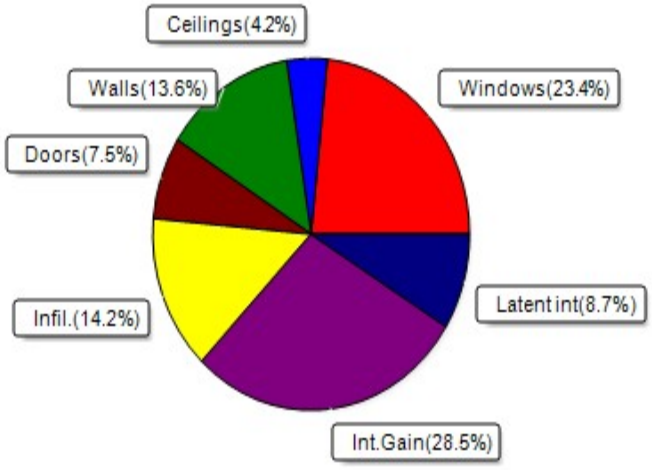
Load component			Load	
Window total	203	sqft	2680	Btuh
Wall total	1506	sqft	4655	Btuh
Door total	100	sqft	1840	Btuh
Ceiling total	2423	sqft	1457	Btuh
Floor total	2423	sqft	9487	Btuh
Infiltration	63	cfm	2746	Btuh
Duct loss			0	Btuh
Subtotal			**22865**	**Btuh**
Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
TOTAL HEAT LOSS			**22865**	**Btuh**



SUMMER CALCULATIONS

Summer Cooling Load (for 2423 sqft)

Load component			Load	
Window total	203	sqft	4290	Btuh
Wall total	1506	sqft	2490	Btuh
Door total	100	sqft	1380	Btuh
Ceiling total	2423	sqft	764	Btuh
Floor total			0	Btuh
Infiltration	47	cfm	978	Btuh
Internal gain			5240	Btuh
Duct gain			0	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm		0	Btuh
Blower Load			0	Btuh
Total sensible gain			**15142**	**Btuh**
Latent gain(ducts)			0	Btuh
Latent gain(infiltration)			1623	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1600	Btuh
Total latent gain			**3223**	**Btuh**
TOTAL HEAT GAIN			**18365**	**Btuh**



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EnergyGauge® System Sizing
PREPARED BY: _____
DATE: 2-27-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Caleb Bundy

, FL

2/27/2024

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Whole House

	Type*					Overhang		Window Area(sqft)			HTM		Load	
Window	Panes	SHGC	U	InSh	IS	Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded		
1	2 NFRC	0.26, 0.33		No	No	N	11.5f	2.3ft	18.0	0.0	18.0	12	12	211	Btuh
2	2 NFRC	0.26, 0.33		No	No	E	1.5ft	2.3ft	30.0	0.0	30.0	12	31	940	Btuh
3	2 NFRC	0.26, 0.33		No	No	E	1.5ft	2.3ft	6.0	0.0	6.0	12	31	188	Btuh
4	2 NFRC	0.26, 0.33		No	No	S	1.5ft	2.3ft	15.0	15.0	0.0	12	14	176	Btuh
5	2 NFRC	0.26, 0.33		No	No	S	9.5ft	2.3ft	45.0	45.0	0.0	12	14	528	Btuh
6	2 NFRC	0.26, 0.33		No	No	S	1.5ft	2.3ft	30.0	30.0	0.0	12	14	352	Btuh
7	2 NFRC	0.26, 0.33		No	No	W	1.5ft	2.3ft	30.0	0.0	30.0	12	31	940	Btuh
8	2 NFRC	0.26, 0.33		No	No	W	1.5ft	2.3ft	25.0	0.0	25.0	12	31	783	Btuh
9	2 NFRC	0.26, 0.33		No	No	W	1.5ft	2.3ft	4.0	0.0	4.0	12	31	125	Btuh
	Excursion													45	Btuh
	Window Total								203 (sqft)					4290	Btuh

Walls	Type	U-Value	R-Value Cav/Sheath	Area(sqft)	HTM	Load	
1	Frame - Wood - Ext	0.08	19.0/0.0	485.0	1.7	802	Btuh
2	Frame - Wood - Ext	0.08	19.0/0.0	325.5	1.7	538	Btuh
3	Frame - Wood - Ext	0.08	19.0/0.0	111.0	1.7	184	Btuh
4	Frame - Wood - Ext	0.08	19.0/0.0	206.0	1.7	341	Btuh
5	Frame - Wood - Ext	0.08	19.0/0.0	96.0	1.7	159	Btuh
6	Frame - Wood - Ext	0.08	19.0/0.0	282.5	1.7	467	Btuh
	Wall Total			1506 (sqft)		2490	Btuh

Doors	Type	Area (sqft)	HTM	Load	
1	Insulated - Exterior	40.0	13.8	552	Btuh
2	Insulated - Exterior	40.0	13.8	552	Btuh
3	Insulated - Exterior	20.0	13.8	276	Btuh
	Door Total	100 (sqft)		1380	Btuh

Ceilings	Type/Color/Surface	U-Value	R-Value	Area(sqft)	HTM	Load	
1	SnglAsmb w airsp/Light/Metal	0.015	30.0/40.0	2423.0	0.32	764	Btuh
	Ceiling Total			2423 (sqft)		764	Btuh

Floors	Type	R-Value	Size	HTM	Load	
1	Slab On Grade	0.0	2423 (ft-perimeter)	0.0	0	Btuh
	Floor Total		2423.0 (sqft)		0	Btuh
			Envelope Subtotal:		8924	Btuh

Infiltration	Type	Average ACH	Volume(cuft)	Wall Ratio	CFM=	Load	
	Natural	0.13	21807	1	46.9	978	Btuh
Internal gain		Occupants	Btuh/occupant		Appliance	Load	
		8	X 230	+	3400	5240	Btuh
				Sensible Envelope Load:		15142	Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi)			(DGM of 0.000)		0	Btuh
				Sensible Load All Zones		**15142**	**Btuh**

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Caleb Bundy

, FL

2/27/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	**Sensible Envelope Load All Zones**	**15142 Btuh**
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	**15142 Btuh**
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	**15142 Btuh**
	Latent infiltration gain (for 51 gr. humidity difference)	1623 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	**3223 Btuh**
	TOTAL GAIN	**18365 Btuh**

EQUIPMENT

1. Central Unit	#	48000 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)

Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Caleb Bundy
, FL Building Type: User

2/27/2024

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
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 0.26	Vinyl	0.33	N	18.0	13.2	238 Btuh
2	2, NFRC 0.26	Vinyl	0.33	E	30.0	13.2	396 Btuh
3	2, NFRC 0.26	Vinyl	0.33	E	6.0	13.2	79 Btuh
4	2, NFRC 0.26	Vinyl	0.33	S	15.0	13.2	198 Btuh
5	2, NFRC 0.26	Vinyl	0.33	S	45.0	13.2	594 Btuh
6	2, NFRC 0.26	Vinyl	0.33	S	30.0	13.2	396 Btuh
7	2, NFRC 0.26	Vinyl	0.33	W	30.0	13.2	396 Btuh
8	2, NFRC 0.26	Vinyl	0.33	W	25.0	13.2	330 Btuh
9	2, NFRC 0.26	Vinyl	0.33	W	4.0	13.2	53 Btuh
	Window Total				203.0(sqft)		2680 Btuh

Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	485	3.09	1499 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	326	3.09	1006 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	111	3.09	343 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	206	3.09	637 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	96	3.09	297 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	283	3.09	873 Btuh
	Wall Total				1506(sqft)		4655 Btuh

Doors	Type	Storm	Ueff.	Area X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)	40	18.4	736 Btuh
2	Insulated - Exterior,	n	(0.460)	40	18.4	736 Btuh
3	Insulated - Exterior,	n	(0.460)	20	18.4	368 Btuh
	Door Total			100(sqft)		1840Btuh

Ceilings	Type/Color/Surface	Ueff.	R-Value	Area X	HTM=	Load
1	Single as/L/Metal	(0.015)	30.0/40.0	2423	0.60	1457 Btuh
	Ceiling Total			2423(sqft)		1457Btuh

Floors	Type	Ueff.	R-Value	Size X	HTM=	Load
1	Slab On Grade	(1.180)	0.0	201.0 ft(perim.)	47.2	9487 Btuh
	Floor Total			2423 sqft		9487 Btuh

	Envelope Subtotal:	20119 Btuh

Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.17	21807	1.00	62.6	2746 Btuh

Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)	0 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Caleb Bundy
, FL Building Type: User

2/27/2024

All Zones	**Sensible Subtotal All Zones**	**22865 Btuh**

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	22865 Btuh 0 Btuh 22865 Btuh

EQUIPMENT

1. Electric Heat Pump	#	48000 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)

Version 8