

Residential System Sizing Calculation

Summary

Project Title:
Cabral Residence

, FL

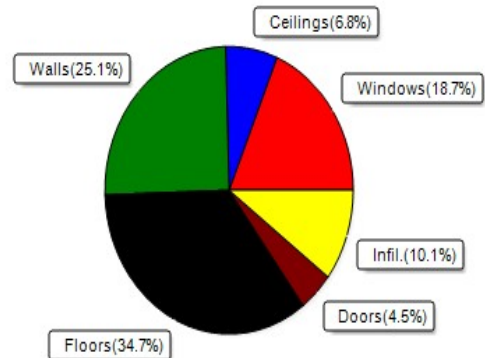
10/18/2023

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	32607 Btuh	Total cooling load calculation	25440 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	147.2 48000	Sensible (SHR = 0.85)	189.8 40800
Heat Pump + Auxiliary(0.0kW)	147.2 48000	Latent	182.4 7200
		Total (Electric Heat Pump)	188.7 48000

WINTER CALCULATIONS

Winter Heating Load (for 3116 sqft)

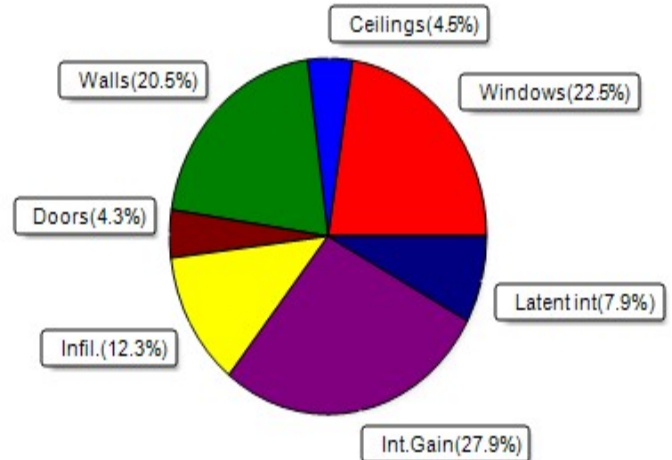
Load component	Load
Window total 255 sqft	6112 Btuh
Wall total 1825 sqft	8195 Btuh
Door total 80 sqft	1472 Btuh
Ceiling total 3116 sqft	2206 Btuh
Floor total 3116 sqft	11328 Btuh
Infiltration 75 cfm	3295 Btuh
Duct loss	0 Btuh
Subtotal	32607 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	32607 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3116 sqft)

Load component	Load
Window total 255 sqft	5734 Btuh
Wall total 1825 sqft	5224 Btuh
Door total 80 sqft	1104 Btuh
Ceiling total 3116 sqft	1156 Btuh
Floor total	0 Btuh
Infiltration 56 cfm	1174 Btuh
Internal gain	7100 Btuh
Duct gain	0 Btuh
Sens. Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	21492 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1948 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	2000 Btuh
Total latent gain	3948 Btuh
TOTAL HEAT GAIN	25440 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____ 10-18-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Cabral Residence

, FL

10/18/2023

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

Window	Type*					Overhang		Window Area(sqft)			HTM		Load		
	Panes	SHGC	U	InSh	IS Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded			
1	2 NFRC	0.27, 0.60	No	No	N	1.5ft	2.3ft	60.0	0.0	60.0	17	17	1025	Btuh	
2	2 NFRC	0.27, 0.60	No	No	N	1.5ft	2.3ft	9.0	0.0	9.0	17	17	154	Btuh	
3	2 NFRC	0.27, 0.60	No	No	E	1.5ft	2.3ft	3.0	0.0	3.0	17	37	112	Btuh	
4	2 NFRC	0.27, 0.60	No	No	E	1.5ft	2.3ft	15.0	0.0	15.0	17	37	561	Btuh	
5	2 NFRC	0.27, 0.60	No	No	S	1.5ft	2.3ft	105.0	105.0	0.0	17	19	1793	Btuh	
6	2 NFRC	0.27, 0.60	No	No	S	1.5ft	2.3ft	6.0	6.0	0.0	17	19	102	Btuh	
7	2 NFRC	0.27, 0.60	No	No	S	1.5ft	2.3ft	6.7	6.2	0.5	17	19	115	Btuh	
8	2 NFRC	0.27, 0.60	No	No	W	1.5ft	2.3ft	30.0	0.0	30.0	17	37	1123	Btuh	
9	2 NFRC	0.27, 0.60	No	No	W	1.5ft	2.3ft	20.0	0.0	20.0	17	37	749	Btuh	
	Window Total							255 (sqft)						5734	Btuh
Walls	Type	U-Value					R-Value		Area(sqft)		HTM		Load		
							Cav/Sheath								
1	Frame - Steel - Ext	0.11					13.0/0.0		609.0		2.9		1743 Btuh		
2	Frame - Steel - Ext	0.11					13.0/0.0		324.0		2.9		927 Btuh		
3	Frame - Steel - Ext	0.11					13.0/0.0		600.3		2.9		1718 Btuh		
4	Frame - Steel - Ext	0.11					13.0/0.0		292.0		2.9		836 Btuh		
	Wall Total							1825 (sqft)					5224	Btuh	
Doors	Type	U-Value					R-Value		Area (sqft)		HTM		Load		
1	Insulated - Exterior								20.0		13.8		276 Btuh		
2	Insulated - Exterior								40.0		13.8		552 Btuh		
3	Insulated - Exterior								20.0		13.8		276 Btuh		
	Door Total							80 (sqft)					1104	Btuh	
Ceilings	Type/Color/Surface	U-Value					R-Value		Area(sqft)		HTM		Load		
1	SnglAsmb no airsp/Light/Metal	0.018					30.0/30.0		3116.0		0.37		1156 Btuh		
	Ceiling Total							3116 (sqft)					1156	Btuh	
Floors	Type	U-Value					R-Value		Size		HTM		Load		
1	Slab On Grade						0.0		3116 (ft-perimeter)		0.0		0 Btuh		
	Floor Total							3116.0 (sqft)					0	Btuh	
	Envelope Subtotal:													13218	Btuh
Infiltration	Type	Average ACH					Volume(cuft)		Wall Ratio		CFM=		Load		
	Natural	0.12					28044		1		56.3		1174 Btuh		
Internal gain		Occupants					Btuh/occupant		Appliance		Load				
		10					X 230		+		4800		7100 Btuh		
	Sensible Envelope Load:													21492	Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)													0	Btuh
	Sensible Load All Zones													21492	Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Cabral Residence

, FL

10/18/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	21492 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	21492 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	21492 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1948 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (10.0 people @ 200 Btuh per person)	2000 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3948 Btuh
	TOTAL GAIN	25440 Btuh

EQUIPMENT

1. Central Unit	#	48000 Btuh
-----------------	---	------------

*Key: Window types (Panels - 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:
Cabral Residence
Building Type: User

, FL

10/18/2023

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 0.27	Vinyl	0.60	N	60.0		24.0	1440 Btuh
2	2, NFRC 0.27	Vinyl	0.60	N	9.0		24.0	216 Btuh
3	2, NFRC 0.27	Vinyl	0.60	E	3.0		24.0	72 Btuh
4	2, NFRC 0.27	Vinyl	0.60	E	15.0		24.0	360 Btuh
5	2, NFRC 0.27	Vinyl	0.60	S	105.0		24.0	2520 Btuh
6	2, NFRC 0.27	Vinyl	0.60	S	6.0		24.0	144 Btuh
7	2, NFRC 0.27	Vinyl	0.60	S	6.7		24.0	160 Btuh
8	2, NFRC 0.27	Vinyl	0.60	W	30.0		24.0	720 Btuh
9	2, NFRC 0.27	Vinyl	0.60	W	20.0		24.0	480 Btuh
	Window Total				254.7(sqft)			6112 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Steel	- Ext	(0.112)	13.0/0.0	609		4.49	2734 Btuh
2	Frame - Steel	- Ext	(0.112)	13.0/0.0	324		4.49	1455 Btuh
3	Frame - Steel	- Ext	(0.112)	13.0/0.0	600		4.49	2695 Btuh
4	Frame - Steel	- Ext	(0.112)	13.0/0.0	292		4.49	1311 Btuh
	Wall Total				1825(sqft)			8195 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.460)		20		18.4	368 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				80(sqft)			1472Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/L/Metal		(0.018)	30.0/30.0	3116		0.71	2206 Btuh
	Ceiling Total				3116(sqft)			2206Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	240.0 ft(perim.)		47.2	11328 Btuh
	Floor Total				3116 sqft			11328 Btuh
	Envelope Subtotal:							29313 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	28044	1.00	75.1		3295 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con)						(DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones							32607 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Cabral Residence
Building Type: User

10/18/2023

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	32607 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	32607 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