

Residential System Sizing Calculation

Summary

Project Title:
Stallings Residence

, FL

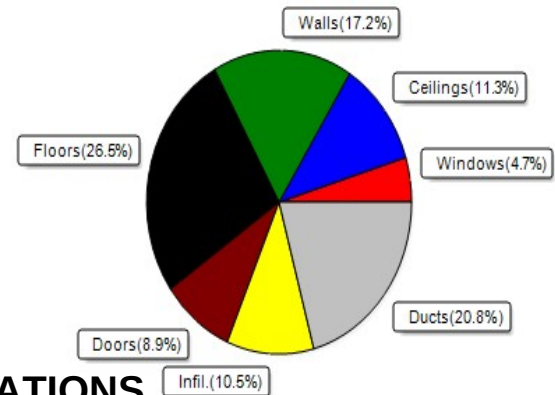
7/25/2023

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	45073 Btuh	Total cooling load calculation	37799 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	106.5 48000	Sensible (SHR = 0.85)	133.4 40800
Heat Pump + Auxiliary(0.0kW)	106.5 48000	Latent	99.7 7200
		Total (Electric Heat Pump)	127.0 48000

WINTER CALCULATIONS

Winter Heating Load (for 3908 sqft)

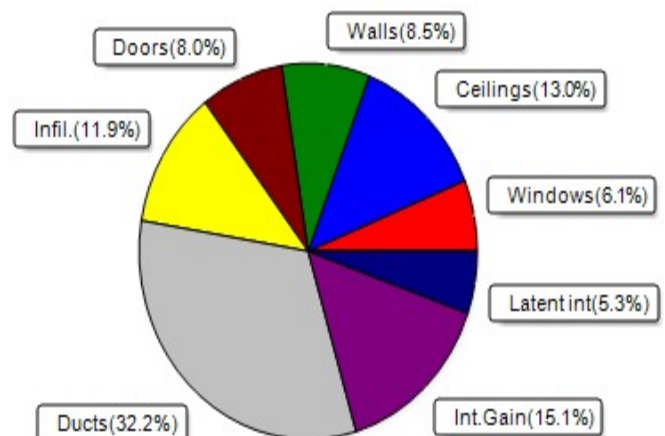
Load component	Load
Window total 205 sqft	2132 Btuh
Wall total 2888 sqft	7766 Btuh
Door total 252 sqft	4032 Btuh
Ceiling total 3908 sqft	5096 Btuh
Floor total See detail report	11942 Btuh
Infiltration 108 cfm	4735 Btuh
Duct loss	9370 Btuh
Subtotal	45073 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	45073 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 3908 sqft)

Load component	Load
Window total 205 sqft	2297 Btuh
Wall total 2888 sqft	3204 Btuh
Door total 252 sqft	3024 Btuh
Ceiling total 3908 sqft	4911 Btuh
Floor total	0 Btuh
Infiltration 81 cfm	1687 Btuh
Internal gain	5700 Btuh
Duct gain	9753 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	30575 Btuh
Latent gain(ducts)	2425 Btuh
Latent gain(infiltration)	2799 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	2000 Btuh
Total latent gain	7224 Btuh
TOTAL HEAT GAIN	37799 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

7-24-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Stallings Residence

, FL

7/25/2023

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	0.20, 0.26	No	No	N	1.5ft	2.3ft	8.0	0.0	8.0	9	9	73 Btuh
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	10.5	0.0	10.5	9	9	96 Btuh
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	10.5	0.0	10.5	9	9	96 Btuh
4	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	20.0	0.0	20.0	9	24	484 Btuh
5	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	2.7	0.0	2.7	9	24	65 Btuh
6	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	5.3	0.0	5.3	9	24	129 Btuh
7	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	144.0	144.0	0.0	9	11	1317 Btuh
8	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	4.0	0.0	4.0	9	9	37 Btuh
	Window Total							205 (sqft)					2297 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load			
1	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		167.9		1.0		172 Btuh		
2	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		46.7		1.0		48 Btuh		
3	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		348.4		1.0		357 Btuh		
4	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		447.1		1.0		459 Btuh		
5	Frame - Wood - Adj		0.09		13.0/0.0		365.8		1.7		617 Btuh		
6	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		191.4		1.0		196 Btuh		
7	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		46.7		1.0		48 Btuh		
8	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		118.2		1.0		121 Btuh		
9	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		376.4		1.0		386 Btuh		
10	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		345.3		1.0		354 Btuh		
11	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		309.8		1.0		318 Btuh		
12	Concrete Blk,Hollow - Ext		0.06		13.0/0.0		124.4		1.0		128 Btuh		
	Wall Total						2888 (sqft)			3204 Btuh			
Doors	Type	Area (sqft)		HTM		Load							
1	Insulated - Exterior		20.0		12.0		240 Btuh						
2	Insulated - Exterior		20.0		12.0		240 Btuh						
3	Insulated - Exterior		96.0		12.0		1152 Btuh						
4	Insulated - Exterior		56.0		12.0		672 Btuh						
5	Insulated - Garage		20.0		12.0		240 Btuh						
6	Insulated - Exterior		20.0		12.0		240 Btuh						
7	Insulated - Exterior		20.0		12.0		240 Btuh						
	Door Total						3024 Btuh						
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load			
1	Vented Attic/Med/Shingle		0.032		30.0/0.0		2546.0		1.40		3568 Btuh		
2	SnglAsmb no airsp/Med/Shingle		0.034		30.0/0.0		1362.0		0.99		1343 Btuh		
	Ceiling Total						3908 (sqft)			4911 Btuh			
Floors	Type	R-Value		Size		HTM		Load					
1	Slab On Grade		0.0		1184 (ft-perimeter)		0.0		0 Btuh				
2	Interior		0.0		1362 (sqft)		0.0		0 Btuh				
3	Slab On Grade		0.0		1362 (ft-perimeter)		0.0		0 Btuh				
	Floor Total						3908.0 (sqft)			0 Btuh			
	Envelope Subtotal:											13436 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Stallings Residence

, FL

7/25/2023

Infiltration	Type Natural	Average ACH 0.14	Volume(cuft) 35635	Wall Ratio 1	CFM= 81.0	Load 1687 Btuh
Internal gain		Occupants 10	Btuh/occupant X 230	Appliance +	3400	Load 5700 Btuh
	Sensible Envelope Load:					20823 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.468)					9753 Btuh
	Sensible Load All Zones					30575 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Stallings Residence

, FL

7/25/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	20823 Btuh
	Sensible Duct Load	9753 Btuh
	Total Sensible Zone Loads	30575 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	30575 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2799 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	2425 Btuh
	Latent occupant gain (10.0 people @ 200 Btuh per person)	2000 Btuh
	Latent other gain	0 Btuh
	Latent total gain	7224 Btuh
	TOTAL GAIN	37799 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:
Stallings Residence
Building Type: User

, FL

7/25/2023

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 0.20	Vinyl	0.26	N	8.0		10.4	83 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	10.5		10.4	109 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	10.5		10.4	109 Btuh
4	2, NFRC 0.20	Vinyl	0.26	E	20.0		10.4	208 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	2.7		10.4	28 Btuh
6	2, NFRC 0.20	Vinyl	0.26	E	5.3		10.4	55 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	144.0		10.4	1498 Btuh
8	2, NFRC 0.20	Vinyl	0.26	N	4.0		10.4	42 Btuh
	Window Total				205.0(sqft)			2132 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	168		2.56	430 Btuh
2	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	47		2.56	120 Btuh
3	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	348		2.56	893 Btuh
4	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	447		2.56	1146 Btuh
5	Frame - Wood	- Adj	(0.089)	13.0/0.0	366		3.55	1299 Btuh
6	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	191		2.56	491 Btuh
7	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	47		2.56	120 Btuh
8	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	118		2.56	303 Btuh
9	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	376		2.56	965 Btuh
10	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	345		2.56	885 Btuh
11	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	310		2.56	794 Btuh
12	Conc Blk,Hollow	- Ext	(0.064)	13.0/0.0	124		2.56	319 Btuh
	Wall Total				2888(sqft)			7766 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior,	n	(0.400)		96		16.0	1536 Btuh
4	Insulated - Exterior,	n	(0.400)		56		16.0	896 Btuh
5	Insulated - Garage,	n	(0.400)		20		16.0	320 Btuh
6	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
7	Insulated - Exterior,	n	(0.400)		20		16.0	320 Btuh
	Door Total				252(sqft)			4032Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/M/Shing		(0.032)	30.0/0.0	2546		1.3	3243 Btuh
2	Single as/M/Shing		(0.034)	30.0/0.0	1362		1.4	1852 Btuh
	Ceiling Total				3908(sqft)			5096Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	104.0 ft(perim.)		47.2	4909 Btuh
2	Interior		(1.180)	0.0	1362.0 sqft		0.0	0 Btuh
3	Slab On Grade		(1.180)	0.0	149.0 ft(perim.)		47.2	7033 Btuh
	Floor Total				3908 sqft			11942 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Stallings Residence
Building Type: User

7/25/2023

	Envelope Subtotal:						30967 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.18	35635	1.00	108.0	4735 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.262)	9370 Btuh
All Zones	Sensible Subtotal All Zones						45073 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss						45073 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)						0 Btuh
	Total Heat Loss						45073 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