

Residential System Sizing Calculation

Summary

Spec House

Project Title:
Aaron Simque Homes

Lake City, FL 32024

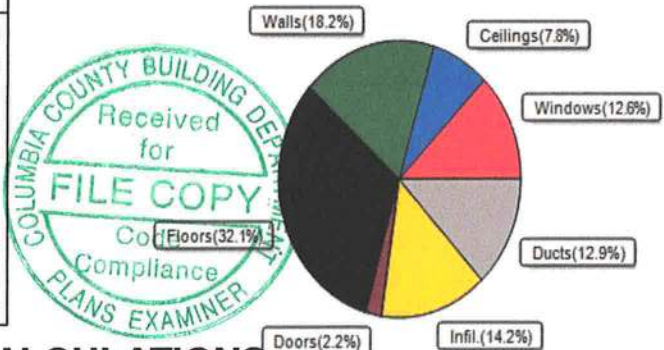
4/21/2017

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 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	29516 Btuh	Total cooling load calculation	23272 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	142.3 42000	Sensible (SHR = 0.80)	181.0 33600
Heat Pump + Auxiliary(0.0kW)	142.3 42000	Latent	178.6 8400
		Total (Electric Heat Pump)	180.5 42000

WINTER CALCULATIONS

Winter Heating Load (for 1807 sqft)

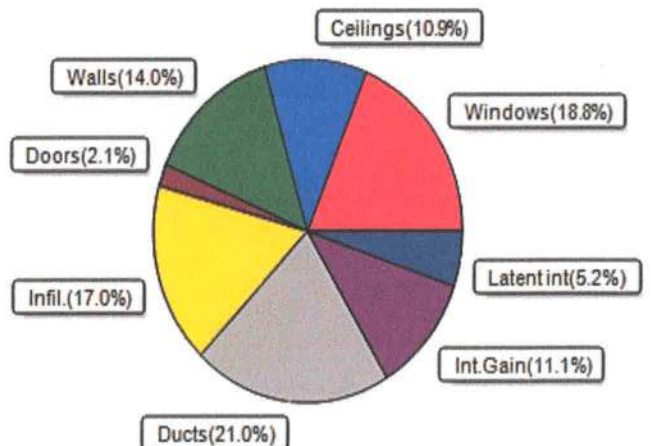
Load component		Load	
Window total	282 sqft	3727 Btuh	
Wall total	1512 sqft	5368 Btuh	
Door total	40 sqft	640 Btuh	
Ceiling total	1807 sqft	2302 Btuh	
Floor total	1807 sqft	9487 Btuh	
Infiltration	95 cfm	4181 Btuh	
Duct loss		3810 Btuh	
Subtotal		29516 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		29516 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 1807 sqft)

Load component		Load	
Window total	282 sqft	4372 Btuh	
Wall total	1512 sqft	3261 Btuh	
Door total	40 sqft	480 Btuh	
Ceiling total	1807 sqft	2532 Btuh	
Floor total		0 Btuh	
Infiltration	72 cfm	1490 Btuh	
Internal gain		2580 Btuh	
Duct gain		3853 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		18568 Btuh	
Latent gain(ducts)		1032 Btuh	
Latent gain(infiltration)		2472 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		1200 Btuh	
Total latent gain		4703 Btuh	
TOTAL HEAT GAIN		23272 Btuh	



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

4-21-17

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Spec House

Project Title:
Aaron Simque Homes

Lake City, FL 32024

4/21/2017

Reference City: Gainesville, FL

Temperature Difference: 19.0F(TMY3 99%)

Humidity difference: 51gr.

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	0.22, 0.33	No	No	N		9.5ft	1.3ft	90.0	0.0	90.0	11	11	981	Btuh
2	2 NFRC	0.22, 0.33	No	No	N		9.5ft	1.3ft	24.0	0.0	24.0	11	11	262	Btuh
3	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	36.0	0.0	36.0	11	27	989	Btuh
4	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	24.0	0.0	24.0	11	11	262	Btuh
5	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	20.0	0.0	20.0	11	11	218	Btuh
6	2 NFRC	0.22, 0.33	No	No	N		1.5ft	1.3ft	12.0	0.0	12.0	11	11	131	Btuh
7	2 NFRC	0.22, 0.33	No	No	S		7.5ft	1.3ft	13.3	13.3	0.0	11	13	145	Btuh
8	2 NFRC	0.22, 0.33	No	No	S		1.5ft	1.3ft	36.0	36.0	0.0	11	13	392	Btuh
9	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	9.0	0.0	9.0	11	27	247	Btuh
10	2 NFRC	0.22, 0.33	No	No	W		1.5ft	1.3ft	18.0	0.0	18.0	11	27	495	Btuh
	Excursion													251	Btuh
	Window Total								282 (sqft)					4372 Btuh	
Walls	Type	U-Value				R-Value		Area(sqft)			HTM		Load		
						Cav/Sheath									
1	Frame - Wood - Ext	0.09				13.0/0.0		142.5			2.3		323 Btuh		
2	Frame - Wood - Ext	0.09				13.0/0.0		15.0			2.3		34 Btuh		
3	Frame - Wood - Ext	0.09				13.0/0.0		73.0			2.3		165 Btuh		
4	Frame - Wood - Ext	0.09				13.0/0.0		348.0			2.3		788 Btuh		
5	Frame - Wood - Ext	0.09				13.0/0.0		40.0			2.3		91 Btuh		
6	Frame - Wood - Ext	0.09				13.0/0.0		76.5			2.3		173 Btuh		
7	Frame - Wood - Ext	0.09				13.0/0.0		97.5			2.3		221 Btuh		
8	Frame - Wood - Ext	0.09				13.0/0.0		441.0			2.3		998 Btuh		
9	Frame - Wood - Adj	0.09				13.0/0.0		278.5			1.7		470 Btuh		
	Wall Total								1512 (sqft)					3261 Btuh	
Doors	Type							Area (sqft)			HTM		Load		
1	Insulated - Exterior							20.0			12.0		240 Btuh		
2	Insulated - Garage							20.0			12.0		240 Btuh		
	Door Total								40 (sqft)					480 Btuh	
Ceilings	Type/Color/Surface	U-Value				R-Value		Area(sqft)			HTM		Load		
1	Vented Attic/Light/Shingle	0.032				30.0/0.0		1807.0			1.40		2532 Btuh		
	Ceiling Total								1807 (sqft)					2532 Btuh	
Floors	Type					R-Value		Size			HTM		Load		
1	Slab On Grade					0.0		1807 (ft-perimeter)			0.0		0 Btuh		
	Floor Total								1807.0 (sqft)					0 Btuh	
	Envelope Subtotal:													10646 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Spec House

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Aaron Simque Homes

Lake City, FL 32024

4/21/2017

Infiltration	Type Natural	Average ACH 0.26	Volume(cuft) 16263	Wall Ratio 1	CFM= 71.6	Load 1490 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	1200	Load 2580 Btuh
	Sensible Envelope Load:					14716 Btuh
Duct load	Average sealed, Supply(R8.0-Attic), Return(R8.0-Attic) (DGM of 0.262)					3853 Btuh
	Sensible Load All Zones					18568 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Spec House

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Aaron Simque Homes

Lake City, FL 32024

4/21/2017

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	14716 Btuh
	Sensible Duct Load	3853 Btuh
	Total Sensible Zone Loads	18568 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	18568 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2472 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1032 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	4703 Btuh
	TOTAL GAIN	23272 Btuh

EQUIPMENT

1. Central Unit	#	42000 Btuh
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*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

Spec House

Lake City, FL 32024

Project Title:
Aaron Simque Homes
Building Type: User

4/21/2017

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 F (TMY3 99%)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.22	Vinyl	0.33	N	90.0		13.2	1188 Btuh
2	2, NFRC 0.22	Vinyl	0.33	N	24.0		13.2	317 Btuh
3	2, NFRC 0.22	Vinyl	0.33	W	36.0		13.2	475 Btuh
4	2, NFRC 0.22	Vinyl	0.33	N	24.0		13.2	317 Btuh
5	2, NFRC 0.22	Vinyl	0.33	N	20.0		13.2	264 Btuh
6	2, NFRC 0.22	Vinyl	0.33	N	12.0		13.2	158 Btuh
7	2, NFRC 0.22	Vinyl	0.33	S	13.3		13.2	176 Btuh
8	2, NFRC 0.22	Vinyl	0.33	S	36.0		13.2	475 Btuh
9	2, NFRC 0.22	Vinyl	0.33	W	9.0		13.2	119 Btuh
10	2, NFRC 0.22	Vinyl	0.33	W	18.0		13.2	238 Btuh
Window Total					282.3(sqft)			3727 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	143		3.55	506 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	15		3.55	53 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	73		3.55	259 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	348		3.55	1236 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	77		3.55	272 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	98		3.55	346 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	441		3.55	1566 Btuh
9	Frame - Wood	- Adj	(0.089)	13.0/0.0	279		3.55	989 Btuh
Wall Total					1512(sqft)			5368 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
2	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					40(sqft)			640Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	1807		1.3	2302 Btuh
Ceiling Total					1807(sqft)			2302Btuh
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					1807 sqft			9487 Btuh
	Envelope Subtotal:							21524 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.35	16263	1.00	95.5		4181 Btuh
Duct load	Average sealed, R8.0, Supply(Att), Return(Att)					(DLM of 0.148)		3810 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Spec House

Lake City, FL 32024

Project Title:
Aaron Simque Homes
Building Type: User

4/21/2017

All Zones	Sensible Subtotal All Zones	29516 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	29516 Btuh 0 Btuh 29516 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	42000 Btuh
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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