

Residential System Sizing Calculation

Summary

Project Title:
Seth & Angel Shaw

, FL

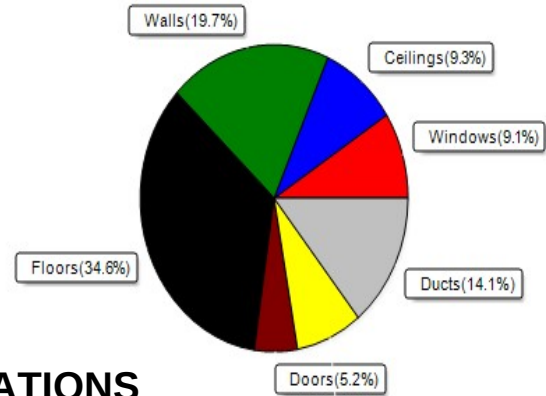
2/23/2024

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (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	30534 Btuh	Total cooling load calculation	25715 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	117.9 36000	Sensible (SHR = 0.85)	138.4 30600
Heat Pump + Auxiliary(0.0kW)	117.9 36000	Latent	150.0 5400
		Total (Electric Heat Pump)	140.0 36000

WINTER CALCULATIONS

Winter Heating Load (for 2240 sqft)

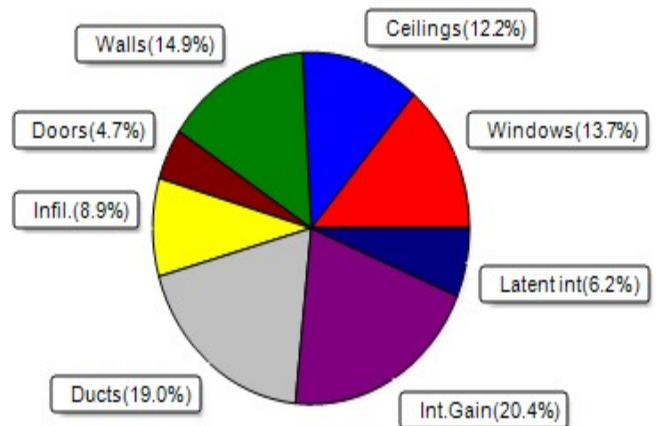
Load component		Load	
Window total	266 sqft	2766	Btuh
Wall total	1745 sqft	6016	Btuh
Door total	100 sqft	1600	Btuh
Ceiling total	2240 sqft	2854	Btuh
Floor total	2240 sqft	10573	Btuh
Infiltration	55 cfm	2418	Btuh
Duct loss		4308	Btuh
Subtotal		30534	Btuh
Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
TOTAL HEAT LOSS		30534	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2240 sqft)

Load component		Load	
Window total	266 sqft	3518	Btuh
Wall total	1745 sqft	3835	Btuh
Door total	100 sqft	1200	Btuh
Ceiling total	2240 sqft	3139	Btuh
Floor total		0	Btuh
Infiltration	41 cfm	861	Btuh
Internal gain		5240	Btuh
Duct gain		4321	Btuh
Sens.Ventilation	Ex:0 cfm; Sup:0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		22115	Btuh
Latent gain(ducts)		571	Btuh
Latent gain(infiltration)		1429	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1600	Btuh
Total latent gain		3600	Btuh
TOTAL HEAT GAIN		25715	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Seth & Angel Shaw

, FL

2/23/2024

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

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	10.5f	2.3ft	49.0	0.0	49.0	9	9	448	Btuh
2	2 NFRC	0.20, 0.26	No	No	N	10.5f	2.3ft	15.0	0.0	15.0	9	9	137	Btuh
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	18.0	0.0	18.0	9	9	165	Btuh
4	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	30.0	0.0	30.0	9	24	727	Btuh
5	2 NFRC	0.20, 0.26	No	No	E	1.5ft	2.3ft	6.0	0.0	6.0	9	24	145	Btuh
6	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	20.0	20.0	0.0	9	11	183	Btuh
7	2 NFRC	0.20, 0.26	No	No	S	7.5ft	2.3ft	72.0	72.0	0.0	9	11	659	Btuh
8	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	20.0	20.0	0.0	9	11	183	Btuh
9	2 NFRC	0.20, 0.26	No	No	W	1.5ft	2.3ft	36.0	0.0	36.0	9	24	872	Btuh
	Window Total							266 (sqft)					3518 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load	
								Cav/Sheath						
1	Frame - Wood - Ext					0.09	13.0/0.6		171.0		2.2		376 Btuh	
2	Frame - Wood - Ext					0.09	13.0/0.6		81.0		2.2		178 Btuh	
3	Frame - Wood - Ext					0.09	13.0/0.6		152.7		2.2		336 Btuh	
4	Frame - Wood - Ext					0.09	13.0/0.6		61.0		2.2		134 Btuh	
5	Frame - Wood - Ext					0.09	13.0/0.6		129.0		2.2		284 Btuh	
6	Frame - Wood - Ext					0.09	13.0/0.6		309.0		2.2		679 Btuh	
7	Frame - Wood - Ext					0.09	13.0/0.6		91.0		2.2		200 Btuh	
8	Frame - Wood - Ext					0.09	13.0/0.6		33.0		2.2		73 Btuh	
9	Frame - Wood - Ext					0.09	13.0/0.6		246.3		2.2		542 Btuh	
10	Frame - Wood - Ext					0.09	13.0/0.6		33.0		2.2		73 Btuh	
11	Frame - Wood - Ext					0.09	13.0/0.6		95.5		2.2		210 Btuh	
12	Frame - Wood - Ext					0.09	13.0/0.6		342.0		2.2		752 Btuh	
	Wall Total							1745 (sqft)					3835 Btuh	
Doors	Type								Area (sqft)		HTM		Load	
	1 Insulated - Exterior							40.0		12.0		480 Btuh		
	2 Insulated - Exterior							20.0		12.0		240 Btuh		
	3 Insulated - Exterior							40.0		12.0		480 Btuh		
	Door Total							100 (sqft)					1200 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load	
	1 Vented Attic/Light/Metal					0.032		30.0/0.0		2240.0		1.40		3139 Btuh
	Ceiling Total							2240 (sqft)					3139 Btuh	
Floors	Type								Size		HTM		Load	
	1 Slab On Grade					0.0		2240 (ft-perimeter)		0.0		0 Btuh		
	Floor Total							2240.0 (sqft)					0 Btuh	
	Envelope Subtotal:												11692 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Seth & Angel Shaw

, FL

2/23/2024

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 20160	Wall Ratio 1	CFM= 41.4	Load 861 Btuh
Internal gain		Occupants 8	Btuh/occupant X 230	Appliance +	3400	Load 5240 Btuh
	Sensible Envelope Load:					17794 Btuh
Duct load	Extremely sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.243)					4321 Btuh
	Sensible Load All Zones					22115 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Seth & Angel Shaw

, FL

2/23/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17794 Btuh
	Sensible Duct Load	4321 Btuh
	Total Sensible Zone Loads	22115 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	22115 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1429 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	571 Btuh
	Latent occupant gain (8.0 people @ 200 Btuh per person)	1600 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3600 Btuh
	TOTAL GAIN	25715 Btuh

EQUIPMENT

1. Central Unit	#	36000 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

Project Title:
Seth & Angel Shaw
Building Type: User

, FL

2/23/2024

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 0.20	Vinyl	0.26	N	49.0		10.4	510 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	15.0		10.4	156 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	18.0		10.4	187 Btuh
4	2, NFRC 0.20	Vinyl	0.26	E	30.0		10.4	312 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	6.0		10.4	62 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	20.0		10.4	208 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	72.0		10.4	749 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	20.0		10.4	208 Btuh
9	2, NFRC 0.20	Vinyl	0.26	W	36.0		10.4	374 Btuh
	Window Total				266.0(sqft)			2766 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.086)	13.0/0.6	171		3.45	590 Btuh
2	Frame - Wood	- Ext	(0.086)	13.0/0.6	81		3.45	279 Btuh
3	Frame - Wood	- Ext	(0.086)	13.0/0.6	153		3.45	526 Btuh
4	Frame - Wood	- Ext	(0.086)	13.0/0.6	61		3.45	210 Btuh
5	Frame - Wood	- Ext	(0.086)	13.0/0.6	129		3.45	445 Btuh
6	Frame - Wood	- Ext	(0.086)	13.0/0.6	309		3.45	1066 Btuh
7	Frame - Wood	- Ext	(0.086)	13.0/0.6	91		3.45	314 Btuh
8	Frame - Wood	- Ext	(0.086)	13.0/0.6	33		3.45	114 Btuh
9	Frame - Wood	- Ext	(0.086)	13.0/0.6	246		3.45	849 Btuh
10	Frame - Wood	- Ext	(0.086)	13.0/0.6	33		3.45	114 Btuh
11	Frame - Wood	- Ext	(0.086)	13.0/0.6	96		3.45	329 Btuh
12	Frame - Wood	- Ext	(0.086)	13.0/0.6	342		3.45	1179 Btuh
	Wall Total				1745(sqft)			6016 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
2	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
3	Insulated - Exterior, n		(0.400)		40		16.0	640 Btuh
	Door Total				100(sqft)			1600Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Flat ceil/L/Metal		(0.032)	30.0/0.0	2240		1.3	2854 Btuh
	Ceiling Total				2240(sqft)			2854Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	224.0 ft(perim.)		47.2	10573 Btuh
	Floor Total				2240 sqft			10573 Btuh
	Envelope Subtotal:							23809 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Seth & Angel Shaw
Building Type: User

2/23/2024

Infiltration	Type Natural	Wholehouse ACH 0.16	Volume(cuft) 20160	Wall Ratio 1.00	CFM= 55.2	2418 Btuh
Duct load	Extremely sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.164)					4308 Btuh
All Zones	Sensible Subtotal All Zones					30534 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss Total Heat Loss	(Ex:0 cfm; Sup:0 cfm)	30534 Btuh 0 Btuh 30534 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	36000 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