

Residential System Sizing Calculation

Summary

Simpson_Turman
1567 SW County Road 242A
Lake City, FL 32024

Project Title:
Simpson_Turman Res

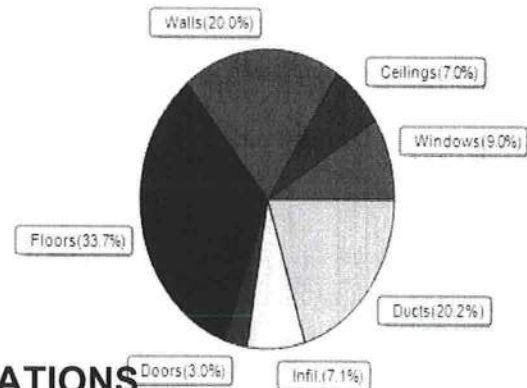
6/10/2022

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	24938 Btuh	Total cooling load calculation	18411 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 24938	Sensible (SHR = 0.70)	86.6 12888
Heat Pump + Auxiliary(0.0kW)	100.0 24938	Latent	156.6 5523
		Total (Electric Heat Pump)	100.0 18411

WINTER CALCULATIONS

Winter Heating Load (for 1647 sqft)

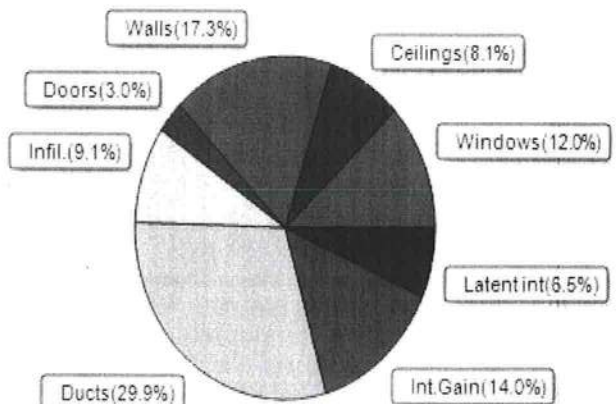
Load component		Load	
Window total	155 sqft	2237 Btuh	
Wall total	1404 sqft	4983 Btuh	
Door total	40 sqft	736 Btuh	
Ceiling total	1729 sqft	1755 Btuh	
Floor total	1647 sqft	8402 Btuh	
Infiltration	41 cfm	1778 Btuh	
Duct loss		5047 Btuh	
Subtotal		24938 Btuh	
Ventilation	0 cfm	0 Btuh	
TOTAL HEAT LOSS		24938 Btuh	



SUMMER CALCULATIONS

Summer Cooling Load (for 1647 sqft)

Load component		Load	
Window total	155 sqft	2219 Btuh	
Wall total	1404 sqft	3177 Btuh	
Door total	40 sqft	552 Btuh	
Ceiling total	1729 sqft	1492 Btuh	
Floor total		0 Btuh	
Infiltration	30 cfm	633 Btuh	
Internal gain		2580 Btuh	
Duct gain		4232 Btuh	
Sens. Ventilation	0 cfm	0 Btuh	
Blower Load		0 Btuh	
Total sensible gain		14885 Btuh	
Latent gain(ducts)		1275 Btuh	
Latent gain(infiltration)		1051 Btuh	
Latent gain(ventilation)		0 Btuh	
Latent gain(internal/occupants/other)		1200 Btuh	
Total latent gain		3526 Btuh	
TOTAL HEAT GAIN		18411 Btuh	



8th Edition

EnergyGauge® / USRC 7.0.00



EnergyGauge® System Sizing

PREPARED BY

DATE

6 / 10 / 2022

W. C. Smith

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Simpson_Turman
1567 SW County Road 242A
Lake City, FL 32024

Project Title:
Simpson_Turman Res
Building Type: User

6/10/2022

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 0.25	Vinyl	0.36	S	15.0		14.4	216 Btuh
2	2, NFRC 0.25	Vinyl	0.36	S	30.0		14.4	432 Btuh
3	2, NFRC 0.25	TIM	0.36	S	13.3		14.4	192 Btuh
4	2, NFRC 0.25	Vinyl	0.36	S	15.0		14.4	216 Btuh
5	2, NFRC 0.25	Vinyl	0.36	E	8.0		14.4	115 Btuh
6	2, NFRC 0.25	Vinyl	0.36	E	6.0		14.4	86 Btuh
7	2, NFRC 0.25	Vinyl	0.36	N	9.0		14.4	130 Btuh
8	2, NFRC 0.25	TIM	0.36	N	40.0		14.4	576 Btuh
9	2, NFRC 0.25	Vinyl	0.36	N	15.0		14.4	216 Btuh
10	2, NFRC 0.25	Vinyl	0.36	W	4.0		14.4	58 Btuh
Window Total					155.3(sqft)			2237 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55	254 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	242		3.55	858 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	92		3.55	325 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	205		3.55	728 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	189		3.55	669 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	84		3.55	298 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	131		3.55	465 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	92		3.55	325 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	299		3.55	1062 Btuh
Wall Total					1404(sqft)			4983 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)		20		18.4	368 Btuh
Door Total					40(sqft)			736Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	1729		1.0	1755 Btuh
Ceiling Total					1729(sqft)			1755Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	178.0 ft(perim.)		47.2	8402 Btuh
Floor Total					1647 sqft			8402 Btuh
	Envelope Subtotal:							18113 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	14823	1.00	40.6		1778 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.254)		5047 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Simpson_Turman
1567 SW County Road 242A
Lake City, FL 32024

Project Title:
Simpson_Turman_Res
Building Type: User

6/10/2022

All Zones	Sensible Subtotal All Zones	24938 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	24938 Btuh 0 Btuh 24938 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	24938 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

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Simpson_Turman
1567 SW County Road 242A
Lake City, FL 32024

Project Title:
Simpson_Turman Res

6/10/2022

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	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	15.0	15.0	0.0	12	14	181	Btuh
2	2 NFRC	0.25, 0.36	No	No	S		7.5ft.	1.0ft.	30.0	30.0	0.0	12	14	363	Btuh
3	2 NFRC	0.25, 0.36	No	No	S		7.5ft.	1.0ft.	13.3	13.3	0.0	12	14	161	Btuh
4	2 NFRC	0.25, 0.36	No	No	S		1.5ft.	1.0ft.	15.0	15.0	0.0	12	14	181	Btuh
5	2 NFRC	0.25, 0.36	No	No	E		1.0ft.	3.0ft.	8.0	0.0	8.0	12	31	248	Btuh
6	2 NFRC	0.25, 0.36	No	No	E		1.0ft.	6.0ft.	6.0	0.0	6.0	12	31	186	Btuh
7	2 NFRC	0.25, 0.36	No	No	N		11.5f	1.0ft.	9.0	0.0	9.0	12	12	109	Btuh
8	2 NFRC	0.25, 0.36	No	No	N		11.5f	1.0ft.	40.0	0.0	40.0	12	12	484	Btuh
9	2 NFRC	0.25, 0.36	No	No	N		1.5ft.	1.0ft.	15.0	0.0	15.0	12	12	181	Btuh
10	2 NFRC	0.25, 0.36	No	No	W		1.0ft.	6.0ft.	4.0	0.0	4.0	12	31	124	Btuh
Window Total									155 (sqft)					2219 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)			HTM		Load				
1	Frame - Wood - Ext		0.09		13.0/0.0			71.5		2.3		162	Btuh		
2	Frame - Wood - Ext		0.09		13.0/0.0			241.7		2.3		547	Btuh		
3	Frame - Wood - Ext		0.09		13.0/0.0			91.5		2.3		207	Btuh		
4	Frame - Wood - Ext		0.09		13.0/0.0			205.0		2.3		464	Btuh		
5	Frame - Wood - Ext		0.09		13.0/0.0			188.5		2.3		427	Btuh		
6	Frame - Wood - Ext		0.09		13.0/0.0			84.0		2.3		190	Btuh		
7	Frame - Wood - Ext		0.09		13.0/0.0			131.0		2.3		296	Btuh		
8	Frame - Wood - Ext		0.09		13.0/0.0			91.5		2.3		207	Btuh		
9	Frame - Wood - Ext		0.09		13.0/0.0			299.0		2.3		677	Btuh		
Wall Total									1404 (sqft)					3177 Btuh	
Doors	Type				Area (sqft)			HTM		Load					
1	Insulated - Exterior						20.0		13.8		276	Btuh			
2	Insulated - Exterior						20.0		13.8		276	Btuh			
Door Total									40 (sqft)					552 Btuh	
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)			HTM		Load				
1	Vented Attic/Light/Shingle/RB		0.025		38.0/0.0			1729.0		0.86		1492	Btuh		
Ceiling Total									1729 (sqft)					1492 Btuh	
Floors	Type				R-Value			Size		HTM		Load			
1	Slab On Grade						0.0		1647 (ft-perimeter)		0.0		0	Btuh	
Floor Total									1647.0 (sqft)					0 Btuh	
Envelope Subtotal:													7440 Btuh		
Infiltration	Type	Average ACH			Volume(cuft)			Wall Ratio		CFM=		Load			
	Natural				0.12		14823		1		30.4		633	Btuh	
Internal gain				Occupants			Btuh/occupant			Appliance		Load			
					6		X 230		+		1200		2580	Btuh	
Sensible Envelope Load:													10653 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Simpson_Turman
1567 SW County Road 242A
Lake City, FL 32024

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Simpson_Turman Res

6/10/2022

Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)	(DGM of 0.397)	4232 Btuh
	Sensible Load All Zones		14885 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Simpson_Turman
1567 SW County Road 242A
Lake City, FL 32024

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Simpson_Turman Res

6/10/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	10653 Btuh
	Sensible Duct Load	4232 Btuh
	Total Sensible Zone Loads	14885 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	14885 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1051 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1275 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3526 Btuh
	TOTAL GAIN	18411 Btuh

EQUIPMENT

1. Central Unit	#	18411 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