

Residential System Sizing Calculation

Summary

Project Title:
Spence

313 SW Cross Pointe, FL 32024

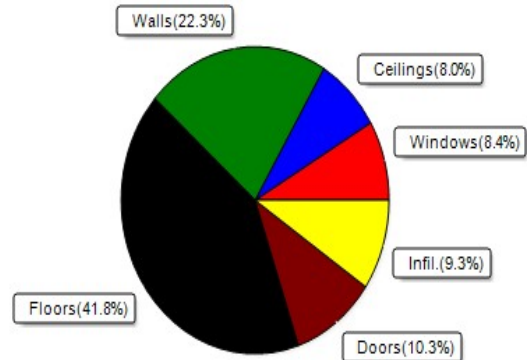
8/25/2021

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	26191 Btuh	Total cooling load calculation	16750 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	137.4 36000	Sensible (SHR = 0.85)	216.8 30600
Heat Pump + Auxiliary(0.0kW)	137.4 36000	Latent	204.9 5400
		Total (Electric Heat Pump)	214.9 36000

WINTER CALCULATIONS

Winter Heating Load (for 2250 sqft)

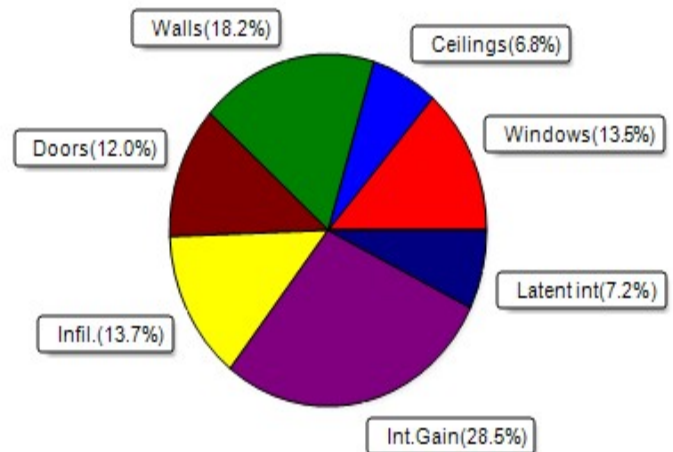
Load component	Load
Window total 91 sqft	2192 Btuh
Wall total 1941 sqft	5835 Btuh
Door total 168 sqft	2688 Btuh
Ceiling total 2250 sqft	2098 Btuh
Floor total 2250 sqft	10950 Btuh
Infiltration 55 cfm	2429 Btuh
Duct loss	0 Btuh
Subtotal	26191 Btuh
Ventilation 0 cfm	0 Btuh
TOTAL HEAT LOSS	26191 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2250 sqft)

Load component	Load
Window total 91 sqft	2255 Btuh
Wall total 1941 sqft	3054 Btuh
Door total 168 sqft	2016 Btuh
Ceiling total 2250 sqft	1143 Btuh
Floor total	0 Btuh
Infiltration 42 cfm	865 Btuh
Internal gain	4780 Btuh
Duct gain	0 Btuh
Sens. Ventilation 0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	14114 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1436 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2636 Btuh
TOTAL HEAT GAIN	16750 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

8-25-21

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Spence

313 SW Cross Pointe, FL 32024

8/25/2021

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	0.27, 0.60	No	No	N		15.5ft	2.3ft.	12.5	0.0	12.5	17	17	213	Btuh	
2	2 NFRC	0.27, 0.60	No	No	W		7.5ft.	2.3ft.	4.2	4.2	0.0	17	37	71	Btuh	
3	2 NFRC	0.27, 0.60	No	No	E		1.5ft.	2.3ft.	4.2	0.0	4.2	17	37	156	Btuh	
4	2 NFRC	0.27, 0.60	No	No	E		1.5ft.	2.3ft.	30.0	0.0	30.0	17	37	1123	Btuh	
5	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	20.3	20.3	0.0	17	19	346	Btuh	
6	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	20.3	20.3	0.0	17	19	346	Btuh	
	Window Total								91 (sqft)					2255 Btuh		
Walls	Type						U-Value		R-Value		Area(sqft)		HTM		Load	
									Cav/Sheath							
1	Frame - Wood - Ext						0.08		19.0/0.6		272.5	1.6		438	Btuh	
2	Frame - Wood - Ext						0.08		19.0/0.6		97.8	1.6		157	Btuh	
3	Frame - Wood - Ext						0.08		19.0/0.6		177.0	1.6		285	Btuh	
4	Frame - Wood - Ext						0.08		19.0/0.6		451.8	1.6		727	Btuh	
5	Frame - Wood - Ext						0.08		19.0/0.6		132.8	1.6		213	Btuh	
6	Frame - Wood - Ext						0.08		19.0/0.6		54.0	1.6		87	Btuh	
7	Frame - Wood - Ext						0.08		19.0/0.6		42.8	1.6		69	Btuh	
8	Frame - Wood - Ext						0.08		19.0/0.6		54.0	1.6		87	Btuh	
9	Frame - Wood - Ext						0.08		19.0/0.6		133.5	1.6		215	Btuh	
10	Frame - Wood - Adj						0.08		19.0/0.6		372.0	1.4		531	Btuh	
11	Frame - Wood - Ext						0.08		19.0/0.6		153.0	1.6		246	Btuh	
	Wall Total								1941 (sqft)					3054 Btuh		
Doors	Type										Area (sqft)		HTM		Load	
1	Insulated - Exterior										96.0	12.0		1152	Btuh	
2	Insulated - Exterior										24.0	12.0		288	Btuh	
3	Insulated - Exterior										24.0	12.0		288	Btuh	
4	Insulated - Garage										24.0	12.0		288	Btuh	
	Door Total								168 (sqft)					2016 Btuh		
Ceilings	Type/Color/Surface						U-Value		R-Value		Area(sqft)		HTM		Load	
1	Cath/Sngl Assem/Light/Metal						0.023		21.0/21.0		2250.0	0.51		1143	Btuh	
	Ceiling Total								2250 (sqft)					1143 Btuh		
Floors	Type								R-Value		Size		HTM		Load	
1	Slab On Grade								0.0		2250 (ft-perimeter)	0.0		0	Btuh	
	Floor Total								2250.0 (sqft)					0 Btuh		
	Envelope Subtotal:													8469 Btuh		
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural						0.12		20250			1	41.6	865	Btuh	
Internal gain							Occupants		Btuh/occupant				Appliance		Load	
							6		X 230			+	3400	4780	Btuh	
	Sensible Envelope Load:													14114 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Spence

313 SW Cross Pointe, FL 32024

8/25/2021

Duct load	Extremelysealed, Supply(R6.0-Cond), Return(R6.0-Cond)	(DGM of 0.000)	0 Btuh
	Sensible Load All Zones		14114 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title:
Spence

Climate:FL_GAINESVILLE_REGIONAL_A

313 SW Cross Pointe, FL 32024

8/25/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	14114 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	14114 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	14114 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1436 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2636 Btuh
	TOTAL GAIN	16750 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

313 SW Cross Pointe, FL 32024

Project Title:
Spence
Building Type: User

8/25/2021

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 0.27	Vinyl	0.60	N	12.5		24.0	300 Btuh
2	2, NFRC 0.27	Vinyl	0.60	W	4.2		24.0	100 Btuh
3	2, NFRC 0.27	Vinyl	0.60	E	4.2		24.0	100 Btuh
4	2, NFRC 0.27	Vinyl	0.60	E	30.0		24.0	720 Btuh
5	2, NFRC 0.27	Vinyl	0.60	S	20.3		24.0	486 Btuh
6	2, NFRC 0.27	Vinyl	0.60	S	20.3		24.0	486 Btuh
	Window Total					91.3(sqft)		2192 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.075)	19.0/0.6	273		3.01	819 Btuh
2	Frame - Wood	- Ext	(0.075)	19.0/0.6	98		3.01	294 Btuh
3	Frame - Wood	- Ext	(0.075)	19.0/0.6	177		3.01	532 Btuh
4	Frame - Wood	- Ext	(0.075)	19.0/0.6	452		3.01	1358 Btuh
5	Frame - Wood	- Ext	(0.075)	19.0/0.6	133		3.01	399 Btuh
6	Frame - Wood	- Ext	(0.075)	19.0/0.6	54		3.01	162 Btuh
7	Frame - Wood	- Ext	(0.075)	19.0/0.6	43		3.01	128 Btuh
8	Frame - Wood	- Ext	(0.075)	19.0/0.6	54		3.01	162 Btuh
9	Frame - Wood	- Ext	(0.075)	19.0/0.6	134		3.01	401 Btuh
10	Frame - Wood	- Adj	(0.075)	19.0/0.6	372		3.01	1118 Btuh
11	Frame - Wood	- Ext	(0.075)	19.0/0.6	153		3.01	460 Btuh
	Wall Total					1941(sqft)		5835 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		96		16.0	1536 Btuh
2	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
3	Insulated - Exterior, n		(0.400)		24		16.0	384 Btuh
4	Insulated - Garage, n		(0.400)		24		16.0	384 Btuh
	Door Total					168(sqft)		2688Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Cathedral/L/Metal		(0.023)	21.0/21.0	2250		0.9	2098 Btuh
	Ceiling Total					2250(sqft)		2098Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	232.0 ft(perim.)		47.2	10950 Btuh
	Floor Total					2250 sqft		10950 Btuh
	Envelope Subtotal:							23763 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	20250	1.00	55.5		2429 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)							0 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

313 SW Cross Pointe, FL 32024

Project Title:
Spence
Building Type: User

8/25/2021

All Zones	Sensible Subtotal All Zones	26191 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	26191 Btuh 0 Btuh 26191 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