

Residential System Sizing Calculation

Summary

Project Title:
Lippi Residence

, FL

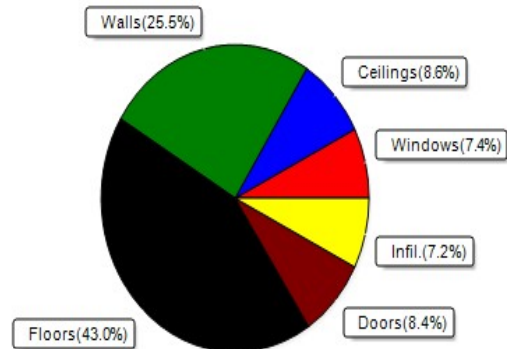
8/16/2024

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	30537 Btuh	Total cooling load calculation	18714 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	137.5 42000	Sensible (SHR = 0.75)	194.2 31500
Heat Pump + Auxiliary(0.0kW)	137.5 42000	Latent	420.7 10500
		Total (Electric Heat Pump)	224.4 42000

WINTER CALCULATIONS

Winter Heating Load (for 1935 sqft)

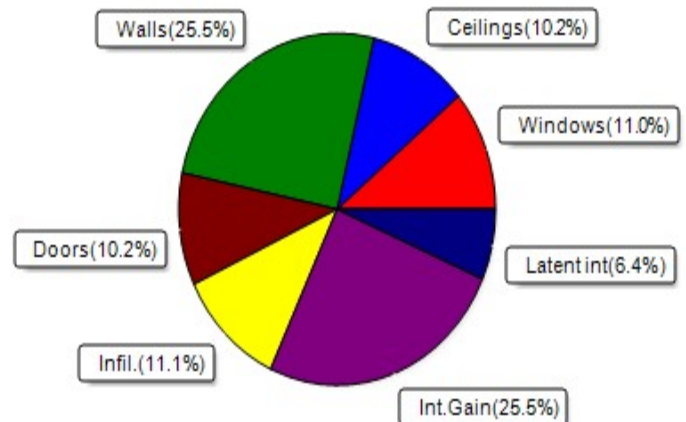
Load component	Load
Window total 216 sqft	2246 Btuh
Wall total 2195 sqft	7793 Btuh
Door total 139 sqft	2551 Btuh
Ceiling total 1935 sqft	2632 Btuh
Floor total 1935 sqft	13122 Btuh
Infiltration 50 cfm	2193 Btuh
Duct loss	0 Btuh
Subtotal	30537 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	30537 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1935 sqft)

Load component	Load
Window total 216 sqft	2066 Btuh
Wall total 2195 sqft	4769 Btuh
Door total 139 sqft	1914 Btuh
Ceiling total 1935 sqft	1908 Btuh
Floor total	0 Btuh
Infiltration 37 cfm	781 Btuh
Internal gain	4780 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	16218 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1296 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2496 Btuh
TOTAL HEAT GAIN	18714 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 8-16-24

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Lippi Residence

, FL

8/16/2024

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		1.5ft	1.3ft	30.0	0.0	30.0	9	9	274 Btuh
2	2 NFRC	0.20, 0.26	No	No	N		13.5f	1.3ft	16.0	0.0	16.0	9	9	146 Btuh
3	2 NFRC	0.20, 0.26	No	No	N		13.5f	1.3ft	72.0	0.0	72.0	9	9	659 Btuh
4	2 NFRC	0.20, 0.26	No	No	N		1.5ft	1.3ft	15.0	0.0	15.0	9	9	137 Btuh
5	2 NFRC	0.20, 0.26	No	No	E		1.5ft	1.3ft	3.0	0.0	3.0	9	24	73 Btuh
6	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	15.0	15.0	0.0	9	11	137 Btuh
7	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	54.0	54.0	0.0	9	11	494 Btuh
8	2 NFRC	0.20, 0.26	No	No	S		1.5ft	1.3ft	8.0	8.0	0.0	9	11	73 Btuh
9	2 NFRC	0.20, 0.26	No	No	W		1.5ft	1.3ft	3.0	0.0	3.0	9	24	73 Btuh
	Window Total								216 (sqft)					2066 Btuh
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load	
								Cav/Sheath						
1	Frame - Wood - Ext						0.09	13.0/0.0	210.0		2.3		475 Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.0	153.0		2.3		346 Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.0	248.3		2.3		562 Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.0	51.0		2.3		115 Btuh	
5	Frame - Wood - Ext						0.09	13.0/0.0	99.0		2.3		224 Btuh	
6	Frame - Wood - Ext						0.09	13.0/0.0	111.0		2.3		251 Btuh	
7	Frame - Wood - Ext						0.09	13.0/0.0	36.0		2.3		81 Btuh	
8	Frame - Wood - Ext						0.09	13.0/0.0	144.0		2.3		326 Btuh	
9	Frame - Wood - Ext						0.09	13.0/0.0	36.0		2.3		81 Btuh	
10	Frame - Wood - Ext						0.09	13.0/0.0	54.0		2.3		122 Btuh	
11	Frame - Wood - Ext						0.09	13.0/0.0	99.0		2.3		224 Btuh	
12	Frame - Wood - Ext						0.09	13.0/0.0	90.0		2.3		204 Btuh	
13	Frame - Wood - Ext						0.09	13.0/0.0	332.7		2.3		753 Btuh	
14	Frame - Wood - Adj						0.09	13.0/0.0	345.0		1.7		582 Btuh	
15	Frame - Wood - Ext						0.09	13.0/0.0	186.0		2.3		421 Btuh	
	Wall Total								2195 (sqft)					4769 Btuh
Doors	Type								Area (sqft)		HTM		Load	
1	Insulated - Exterior								24.0		13.8		331 Btuh	
2	Insulated - Exterior								45.3		13.8		626 Btuh	
3	Insulated - Exterior								45.3		13.8		626 Btuh	
4	Insulated - Garage								24.0		13.8		331 Btuh	
	Door Total								139 (sqft)					1914 Btuh
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load	
1	SnglAsmb no airsp/DarkShingle						0.034	0.0/30.0	1935.0		0.99		1908 Btuh	
	Ceiling Total								1935 (sqft)					1908 Btuh
Floors	Type						R-Value		Size		HTM		Load	
1	Slab On Grade						0.0		1935 (ft-perimeter)		0.0		0 Btuh	
	Floor Total								1935.0 (sqft)					0 Btuh
	Envelope Subtotal:													10657 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lippi Residence

, FL

8/16/2024

Infiltration	Type Natural	Average ACH 0.13	Volume(cuft) 17415	Wall Ratio 1	CFM= 37.5	Load 781 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
	Sensible Envelope Load:					16218 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					16218 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title:
Lippi Residence

Climate:FL_GAINESVILLE_REGIONAL_A

, FL

8/16/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16218 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	16218 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16218 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1296 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	2496 Btuh
	TOTAL GAIN	18714 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

, FL

Project Title:
Lippi Residence
Building Type: User

8/16/2024

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	30.0		10.4	312 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	16.0		10.4	166 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	72.0		10.4	749 Btuh
4	2, NFRC 0.20	Vinyl	0.26	N	15.0		10.4	156 Btuh
5	2, NFRC 0.20	Vinyl	0.26	E	3.0		10.4	31 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	15.0		10.4	156 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	54.0		10.4	562 Btuh
8	2, NFRC 0.20	Vinyl	0.26	S	8.0		10.4	83 Btuh
9	2, NFRC 0.20	Vinyl	0.26	W	3.0		10.4	31 Btuh
	Window Total				216.0(sqft)			2246 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	210		3.55	746 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	153		3.55	543 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	248		3.55	882 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	51		3.55	181 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	99		3.55	351 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	111		3.55	394 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	144		3.55	511 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	36		3.55	128 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	99		3.55	351 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	320 Btuh
13	Frame - Wood	- Ext	(0.089)	13.0/0.0	333		3.55	1181 Btuh
14	Frame - Wood	- Adj	(0.089)	13.0/0.0	345		3.55	1225 Btuh
15	Frame - Wood	- Ext	(0.089)	13.0/0.0	186		3.55	660 Btuh
	Wall Total				2195(sqft)			7793 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
2	Insulated - Exterior,	n	(0.460)		45		18.4	834 Btuh
3	Insulated - Exterior,	n	(0.460)		45		18.4	834 Btuh
4	Insulated - Garage,	n	(0.460)		24		18.4	442 Btuh
	Door Total				139(sqft)			2551Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Shing		(0.034)	0.0/30.0	1935		1.4	2632 Btuh
	Ceiling Total				1935(sqft)			2632Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	278.0 ft(perim.)		47.2	13122 Btuh
	Floor Total				1935 sqft			13122 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Lippi Residence
Building Type: User

8/16/2024

	Envelope Subtotal:						28344 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.17	17415	1.00	50.0	2193 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)						0 Btuh
All Zones	Sensible Subtotal All Zones						30537 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	30537 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	30537 Btuh

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