

Residential System Sizing Calculation

Summary

Project Title:
Lewis Residence

, FL

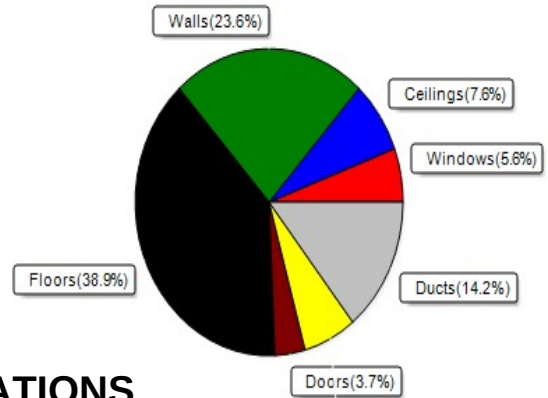
12/14/2023

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	17332 Btuh	Total cooling load calculation	15579 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	173.1 30000	Sensible (SHR = 0.85)	194.6 25500
Heat Pump + Auxiliary(0.0kW)	173.1 30000	Latent	181.9 4500
		Total (Electric Heat Pump)	192.6 30000

WINTER CALCULATIONS

Winter Heating Load (for 1034 sqft)

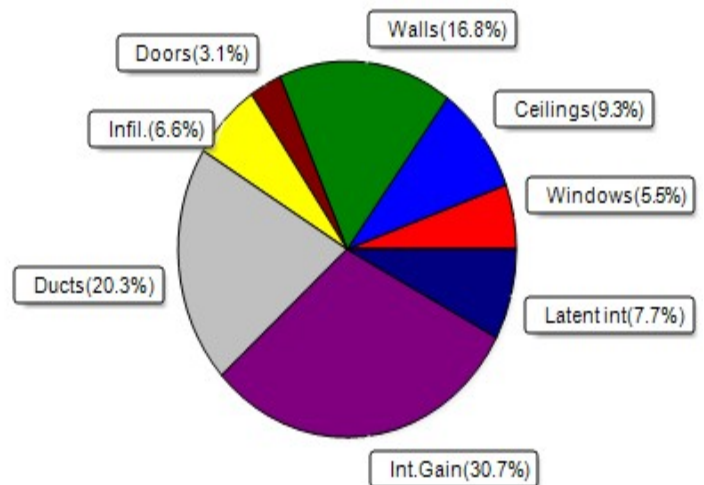
Load component	Load
Window total 94 sqft	978 Btuh
Wall total 1153 sqft	4094 Btuh
Door total 40 sqft	640 Btuh
Ceiling total 1034 sqft	1317 Btuh
Floor total 1034 sqft	6750 Btuh
Infiltration 25 cfm	1093 Btuh
Duct loss	2461 Btuh
Subtotal	17332 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	17332 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1034 sqft)

Load component	Load
Window total 94 sqft	860 Btuh
Wall total 1153 sqft	2610 Btuh
Door total 40 sqft	480 Btuh
Ceiling total 1034 sqft	1449 Btuh
Floor total	0 Btuh
Infiltration 19 cfm	389 Btuh
Internal gain	4780 Btuh
Duct gain	2537 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	13105 Btuh
Latent gain(ducts)	628 Btuh
Latent gain(infiltration)	646 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2474 Btuh
TOTAL HEAT GAIN	15579 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

12-14-23

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Lewis Residence

, FL

12/14/2023

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	2.3ft	15.0	0.0	15.0	9	9	137	Btuh		
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	9.0	0.0	9.0	9	9	82	Btuh		
3	2 NFRC	0.20, 0.26	No	No	N	1.5ft	2.3ft	10.0	0.0	10.0	9	9	91	Btuh		
4	2 NFRC	0.20, 0.26	No	No	S	1.5ft	2.3ft	60.0	60.0	0.0	9	11	549	Btuh		
	Window Total							94 (sqft)					860 Btuh			
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load		
								Cav/Sheath								
	1	Frame - Wood - Ext					0.09	13.0/0.0	117.0			2.3		265 Btuh		
	2	Frame - Wood - Ext					0.09	13.0/0.0	54.0			2.3		122 Btuh		
	3	Frame - Wood - Ext					0.09	13.0/0.0	225.0			2.3		509 Btuh		
	4	Frame - Wood - Ext					0.09	13.0/0.0	193.5			2.3		438 Btuh		
	5	Frame - Wood - Ext					0.09	13.0/0.0	316.0			2.3		715 Btuh		
	6	Frame - Wood - Ext					0.09	13.0/0.0	247.5			2.3		560 Btuh		
	Wall Total							1153 (sqft)					2610 Btuh			
Doors	Type						Area (sqft)			HTM		Load				
	1	Insulated - Exterior					20.0			12.0		240 Btuh				
	2	Insulated - Exterior					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/Med/Shingle					0.032	30.0/0.0	1034.0			1.40		1449 Btuh		
	Ceiling Total							1034 (sqft)					1449 Btuh			
Floors	Type						R-Value		Size			HTM		Load		
	1	Slab On Grade					0.0		1034 (ft-perimeter)			0.0		0 Btuh		
	Floor Total							1034.0 (sqft)					0 Btuh			
	Envelope Subtotal:												5398 Btuh			
Infiltration	Type						Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural						0.12		9306		1		18.7		389 Btuh	
Internal gain							Occupants		Btuh/occupant			Appliance		Load		
							6		X 230			+		4780 Btuh		
	Sensible Envelope Load:												10568 Btuh			
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)												(DGM of 0.240)		2537 Btuh	
	Sensible Load All Zones												13105 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lewis Residence

, FL

12/14/2023

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	10568 Btuh
	Sensible Duct Load	2537 Btuh
	Total Sensible Zone Loads	13105 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	13105 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	646 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	628 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2474 Btuh
	TOTAL GAIN	15579 Btuh

EQUIPMENT

1. Central Unit	#	30000 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:
Lewis Residence
Building Type: User

12/14/2023

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	15.0		10.4	156 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	9.0		10.4	94 Btuh
3	2, NFRC 0.20	Vinyl	0.26	N	10.0		10.4	104 Btuh
4	2, NFRC 0.20	Vinyl	0.26	S	60.0		10.4	624 Btuh
	Window Total				94.0(sqft)			978 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	117		3.55	415 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	192 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	225		3.55	799 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	194		3.55	687 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	316		3.55	1122 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	248		3.55	879 Btuh
	Wall Total				1153(sqft)			4094 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
2	Insulated - Exterior, 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	Flat ceil/M/Shing		(0.032)	30.0/0.0	1034		1.3	1317 Btuh
	Ceiling Total				1034(sqft)			1317Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	143.0 ft(perim.)		47.2	6750 Btuh
	Floor Total				1034 sqft			6750 Btuh
	Envelope Subtotal:							13778 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	9306	1.00	24.9		1093 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.165)		2461 Btuh
All Zones	Sensible Subtotal All Zones							17332 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Lewis Residence
Building Type: User

12/14/2023

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	17332 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	17332 Btuh

EQUIPMENT

1. Electric Heat Pump	#	30000 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