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Residential System Sizing Calculation

Summary

Project Title:
Lot 8 Crosswinds

Lake City, FL 32024

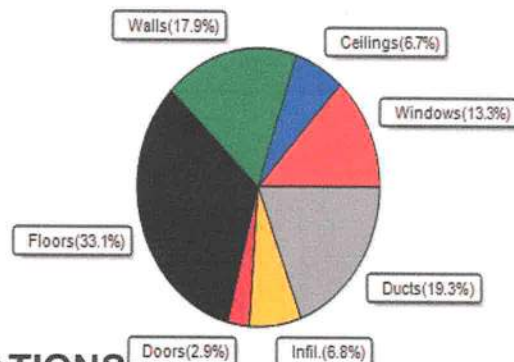
4/12/2022

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	25297 Btuh	Total cooling load calculation	20241 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	100.0 25297	Sensible (SHR = 0.70)	84.2 14169
Heat Pump + Auxiliary(0.0kW)	100.0 25297	Latent	177.9 6072
		Total (Electric Heat Pump)	100.0 20241

WINTER CALCULATIONS

Winter Heating Load (for 1595 sqft)

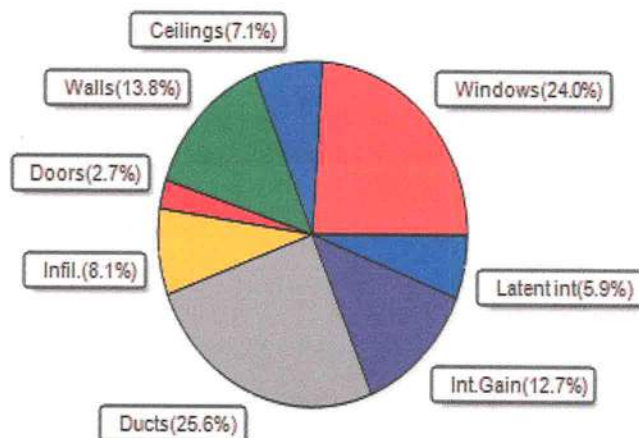
Load component		Load	
Window total	240 sqft	3360	Btuh
Wall total	1277 sqft	4534	Btuh
Door total	40 sqft	736	Btuh
Ceiling total	1675 sqft	1700	Btuh
Floor total	1595 sqft	8373	Btuh
Infiltration	39 cfm	1722	Btuh
Duct loss		4872	Btuh
Subtotal		25297	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		25297	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1595 sqft)

Load component		Load	
Window total	240 sqft	4865	Btuh
Wall total	1277 sqft	2789	Btuh
Door total	40 sqft	552	Btuh
Ceiling total	1675 sqft	1445	Btuh
Floor total		0	Btuh
Infiltration	29 cfm	613	Btuh
Internal gain		2580	Btuh
Duct gain		3982	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		16828	Btuh
Latent gain(ducts)		1196	Btuh
Latent gain(infiltration)		1018	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3414	Btuh
TOTAL HEAT GAIN		20241	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: 4 / 12 / 2022

W. C. Smith

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Lake City, FL 32024

Project Title:
Lot 8 Crosswinds
Building Type: User

4/12/2022

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=
1	2, NFRC 0.26	Vinyl	0.35	S	30.0		14.0
2	2, NFRC 0.26	Vinyl	0.35	E	30.0		14.0
3	2, NFRC 0.26	Vinyl	0.35	N	45.0		14.0
4	2, NFRC 0.26	Metal	0.35	N	60.0		14.0
5	2, NFRC 0.26	Vinyl	0.35	W	75.0		14.0
Window Total					240.0(sqft)		
							3360 Btuh
Walls	Type	Ormt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	103		3.55
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	24		3.55
4	Frame - Wood	- Adj	(0.089)	13.0/0.0	175		3.55
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	357		3.55
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	174		3.55
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	72		3.55
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	93		3.55
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	207		3.55
Wall Total					1277(sqft)		
							4534 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=
1	Insulated - Exterior, n		(0.460)		20		18.4
2	Insulated - Garage, n		(0.460)		20		18.4
Door Total					40(sqft)		
							736Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	1675		1.0
Ceiling Total					1675(sqft)		
							1700Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=
1	Slab On Grade		(1.180)	0.0	177.4 ft(perim.)		47.2
Floor Total					1595 sqft		
							8373 Btuh
							8373 Btuh
Envelope Subtotal:							18703 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural		0.16	14355	1.00	39.3	1722 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att)					(DLM of 0.239)	4872 Btuh
All Zones	Sensible Subtotal All Zones						25297 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL 32024

Project Title:
Lot 8 Crosswinds
Building Type: User

4/12/2022

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	25297 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	25297 Btuh

EQUIPMENT

1. Electric Heat Pump	#	25297 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

Project Title:
Lot 8 Crosswinds

Lake City, FL 32024

4/12/2022

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	0.26, 0.35	No	No	S		10.5f	1.0ft.	30.0	30.0	0.0	12	14	364 Btuh
2	2 NFRC	0.26, 0.35	No	No	E		1.5ft.	1.0ft.	30.0	1.5	28.5	12	32	923 Btuh
3	2 NFRC	0.26, 0.35	No	No	N		1.5ft.	1.0ft.	45.0	0.0	45.0	12	12	545 Btuh
4	2 NFRC	0.26, 0.35	No	No	N		9.5ft.	1.0ft.	60.0	0.0	60.0	12	12	727 Btuh
5	2 NFRC	0.26, 0.35	No	No	W		1.5ft.	1.0ft.	75.0	3.7	71.3	12	32	2307 Btuh
Window Total									240 (sqft)					4865 Btuh
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load				
1	Frame - Wood - Ext		0.09		13.0/0.0		103.0		2.3		233 Btuh			
2	Frame - Wood - Ext		0.09		13.0/0.0		72.0		2.3		163 Btuh			
3	Frame - Wood - Ext		0.09		13.0/0.0		24.0		2.3		54 Btuh			
4	Frame - Wood - Adj		0.09		13.0/0.0		175.0		1.7		295 Btuh			
5	Frame - Wood - Ext		0.09		13.0/0.0		357.0		2.3		808 Btuh			
6	Frame - Wood - Ext		0.09		13.0/0.0		174.0		2.3		394 Btuh			
7	Frame - Wood - Ext		0.09		13.0/0.0		72.0		2.3		163 Btuh			
8	Frame - Wood - Ext		0.09		13.0/0.0		93.0		2.3		210 Btuh			
9	Frame - Wood - Ext		0.09		13.0/0.0		207.0		2.3		469 Btuh			
Wall Total							1277 (sqft)					2789 Btuh		
Doors	Type	U-Value		R-Value		Area (sqft)		HTM		Load				
1	Insulated - Exterior						20.0		13.8		276 Btuh			
2	Insulated - Garage						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		1674.8		0.86		1445 Btuh			
Ceiling Total							1675 (sqft)					1445 Btuh		
Floors	Type	U-Value		R-Value		Size		HTM		Load				
1	Slab On Grade				0.0		1595 (ft-perimeter)		0.0		0 Btuh			
Floor Total							1595.0 (sqft)					0 Btuh		
Envelope Subtotal:												9652 Btuh		
Infiltration	Type	Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load				
	Natural													
			0.12		14355		1		29.5		613 Btuh			
Internal gain		Occupants		Btuh/occupant		Appliance		Load						
			6		X 230		+		1200		2580 Btuh			
Sensible Envelope Load:												12845 Btuh		
Duct load	Average sealed,Supply(R6.0-Attic), Return(R6.0-Attic)	(DGM of 0.310)		Load										
Sensible Load All Zones												16828 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lot 8 Crosswinds

Lake City, FL 32024

4/12/2022

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	12845 Btuh
	Sensible Duct Load	3982 Btuh
	Total Sensible Zone Loads	16828 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16828 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1018 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1196 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3414 Btuh
	TOTAL GAIN	20241 Btuh

EQUIPMENT

1. Central Unit	#	20241 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