

Residential System Sizing Calculation

Summary

Austin & Lindsey Reiter
SW Fritz Glen
Lake City, FL

Project Title:
200405 Reiter Res

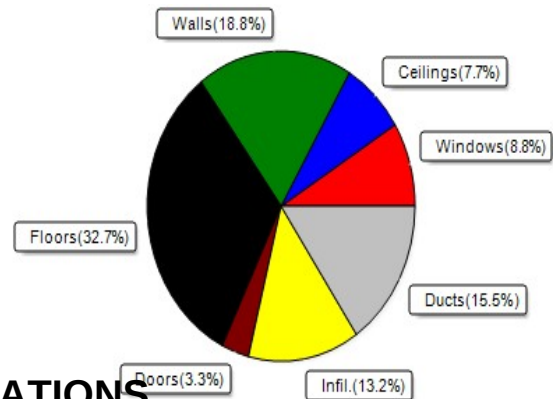
2020-06-09

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	25720 Btuh	Total cooling load calculation	22757 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	112.8 29000	Sensible (SHR = 0.75)	115.8 21750
Heat Pump + Auxiliary(0.0kW)	112.8 29000	Latent	182.7 7250
		Total (Electric Heat Pump)	127.4 29000

WINTER CALCULATIONS

Winter Heating Load (for 1794 sqft)

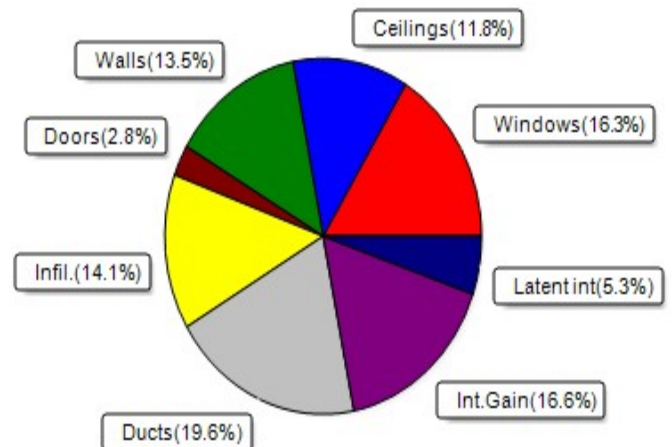
Load component		Load	
Window total	189 sqft	2268	Btuh
Wall total	1360 sqft	4827	Btuh
Door total	53 sqft	853	Btuh
Ceiling total	1956 sqft	1986	Btuh
Floor total	1794 sqft	8402	Btuh
Infiltration	77 cfm	3389	Btuh
Duct loss		3995	Btuh
Subtotal		25720	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		25720	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1794 sqft)

Load component		Load	
Window total	189 sqft	3706	Btuh
Wall total	1360 sqft	3077	Btuh
Door total	53 sqft	640	Btuh
Ceiling total	1956 sqft	2681	Btuh
Floor total		0	Btuh
Infiltration	58 cfm	1207	Btuh
Internal gain		3780	Btuh
Duct gain		3698	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		18790	Btuh
Latent gain(ducts)		764	Btuh
Latent gain(infiltration)		2003	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3968	Btuh
TOTAL HEAT GAIN		22757	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2020-06-09

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Austin & Lindsey Reiter
SW Fritz Glen
Lake City, FL

Project Title:
200405 Reiter Res
Building Type: User

2020-06-09

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 0.20	Vinyl	0.30	NE	9.0		12.0	108 Btuh
2	2, NFRC 0.20	Vinyl	0.30	NE	20.0		12.0	240 Btuh
3	2, NFRC 0.20	Vinyl	0.30	SE	30.0		12.0	360 Btuh
4	2, NFRC 0.20	Vinyl	0.30	SW	4.0		12.0	48 Btuh
5	2, NFRC 0.20	Vinyl	0.30	SW	15.0		12.0	180 Btuh
6	2, NFRC 0.20	Vinyl	0.30	NW	18.0		12.0	216 Btuh
7	2, NFRC 0.20	Vinyl	0.30	NW	36.0		12.0	432 Btuh
8	2, NFRC 0.20	Vinyl	0.30	NW	18.0		12.0	216 Btuh
9	2, NFRC 0.20	Vinyl	0.30	NE	16.0		12.0	192 Btuh
10	2, NFRC 0.20	Vinyl	0.30	NE	8.0		12.0	96 Btuh
11	2, NFRC 0.20	Vinyl	0.30	NE	15.0		12.0	180 Btuh
Window Total					189.0(sqft)			2268 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	177		3.55	627 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	3		3.55	9 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	140		3.55	496 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	116		3.55	410 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	287		3.55	1019 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	320 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	223		3.55	792 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	90		3.55	320 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	236		3.55	836 Btuh
Wall Total					1360(sqft)			4827 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)		13		16.0	213 Btuh
3	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
Door Total					53(sqft)			853Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	1956		1.0	1986 Btuh
Ceiling Total					1956(sqft)			1986Btuh
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					1794 sqft			8402 Btuh
Envelope Subtotal:								18336 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.27	17043	1.00	77.4		3389 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Austin & Lindsey Reiter
SW Fritz Glen
Lake City, FL

Project Title:
200405 Reiter Res
Building Type: User

2020-06-09

Duct load	Average sealed, R6.0, Supply(Att), Return(Con) (DLM of 0.184)	3995 Btuh
All Zones	Sensible Subtotal All Zones	25720 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	25720 Btuh 0 Btuh 25720 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	29000 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

Austin & Lindsey Reiter
SW Fritz Glen
Lake City, FL

Project Title:
200405 Reiter Res

2020-06-09

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	0.20, 0.30	No	No	NE		11.5f	1.0ft.	9.0	0.0	9.0	10	19	172	Btuh
2	2 NFRC	0.20, 0.30	No	No	NE		11.5f	1.0ft.	20.0	0.0	20.0	10	19	383	Btuh
3	2 NFRC	0.20, 0.30	No	No	SE		1.5ft.	1.5ft.	30.0	5.8	24.2	10	20	542	Btuh
4	2 NFRC	0.20, 0.30	No	No	SW		1.5ft.	13.0f	4.0	0.0	4.0	10	20	80	Btuh
5	2 NFRC	0.20, 0.30	No	No	SW		1.5ft.	8.0ft.	15.0	0.0	15.0	10	20	300	Btuh
6	2 NFRC	0.20, 0.30	No	No	NW		1.5ft.	1.5ft.	18.0	0.0	18.0	10	19	345	Btuh
7	2 NFRC	0.20, 0.30	No	No	NW		7.5ft.	1.0ft.	36.0	0.0	36.0	10	19	689	Btuh
8	2 NFRC	0.20, 0.30	No	No	NW		1.5ft.	1.5ft.	18.0	0.0	18.0	10	19	345	Btuh
9	2 NFRC	0.20, 0.30	No	No	NE		1.5ft.	1.3ft.	16.0	0.0	16.0	10	19	306	Btuh
10	2 NFRC	0.20, 0.30	No	No	NE		1.5ft.	10.0f	8.0	0.0	8.0	10	19	153	Btuh
11	2 NFRC	0.20, 0.30	No	No	NE		1.5ft.	4.0ft.	15.0	0.0	15.0	10	19	287	Btuh
	Excursion													104	Btuh
	Window Total								189 (sqft)					3706 Btuh	
Walls	Type	U-Value		R-Value		Area(sqft)		HTM		Load					
					Cav/Sheath										
1	Frame - Wood - Ext		0.09		13.0/0.0		176.5		2.3		399				
2	Frame - Wood - Ext		0.09		13.0/0.0		2.5		2.3		6				
3	Frame - Wood - Ext		0.09		13.0/0.0		139.7		2.3		316				
4	Frame - Wood - Ext		0.09		13.0/0.0		115.5		2.3		261				
5	Frame - Wood - Ext		0.09		13.0/0.0		287.0		2.3		650				
6	Frame - Wood - Ext		0.09		13.0/0.0		90.0		2.3		204				
7	Frame - Wood - Ext		0.09		13.0/0.0		223.0		2.3		505				
8	Frame - Wood - Ext		0.09		13.0/0.0		90.0		2.3		204				
9	Frame - Wood - Ext		0.09		13.0/0.0		235.5		2.3		533				
	Wall Total							1360 (sqft)				3077 Btuh			
Doors	Type	Area (sqft)		HTM		Load									
1	Insulated - Exterior		20.0		12.0		240								
2	Insulated - Exterior		13.3		12.0		160								
3	Insulated - Exterior		20.0		12.0		240								
	Door Total							53 (sqft)				640 Btuh			
Ceilings	Type/Color/Surface	U-Value		R-Value		Area(sqft)		HTM		Load					
1	Vented Attic/DarkShingle		0.025		38.0/0.0		1956.0		1.37		2681				
	Ceiling Total							1956 (sqft)				2681 Btuh			
Floors	Type	R-Value		Size		HTM		Load							
1	Slab On Grade		0.0		1794 (ft-perimeter)		0.0				0				
	Floor Total							1794.0 (sqft)				0 Btuh			
	Envelope Subtotal:											10104 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Austin & Lindsey Reiter
SW Fritz Glen
Lake City, FL

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
200405 Reiter Res

2020-06-09

Infiltration	Type Natural	Average ACH 0.20	Volume(cuft) 17043	Wall Ratio 1	CFM= 58.0	Load 1207 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	2400	Load 3780 Btuh
					Sensible Envelope Load:	15092 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Condi)				(DGM of 0.245)	3698 Btuh
					Sensible Load All Zones	18790 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Austin & Lindsey Reiter
SW Fritz Glen
Lake City, FL

Project Title:
200405 Reiter Res

Climate:FL_GAINESVILLE_REGIONAL_A

2020-06-09

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15092 Btuh
	Sensible Duct Load	3698 Btuh
	Total Sensible Zone Loads	18790 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	18790 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	2003 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	764 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3968 Btuh
	TOTAL GAIN	22757 Btuh

EQUIPMENT

1. Central Unit	#	29000 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