

Residential System Sizing Calculation

Summary

Grace Richards
173 SW Wigwam Court
Fort White, FL

Project Title:
200791 Richards

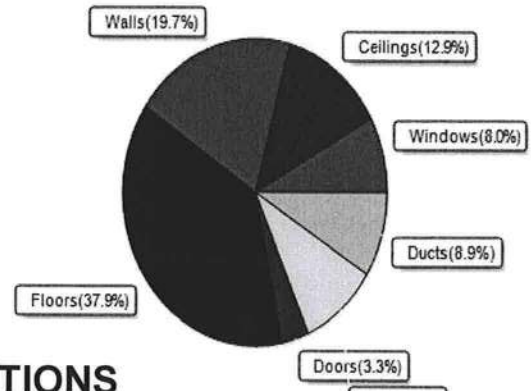
2020-07-22

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(152 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (79F) Humidity difference(54gr.)			
Winter design temperature(MJ8 99%)	32 F	Summer design temperature(MJ8 99%)	99 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	38 F	Summer temperature difference	24 F
Total heating load calculation	18462 Btuh	Total cooling load calculation	17049 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	108.3 20000	Sensible (SHR = 0.75)	105.1 15000
Heat Pump + Auxiliary(0.0kW)	108.3 20000	Latent	179.8 5000
		Total (Electric Heat Pump)	117.3 20000

WINTER CALCULATIONS

Winter Heating Load (for 1440 sqft)

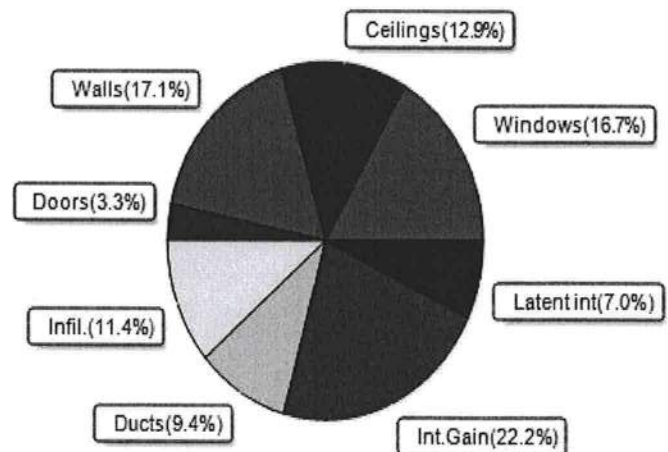
Load component			Load	
Window total	130	sqft	1476	Btuh
Wall total	1079	sqft	3638	Btuh
Door total	40	sqft	608	Btuh
Ceiling total	1440	sqft	2390	Btuh
Floor total	1440	sqft	6995	Btuh
Infiltration	41	cfm	1711	Btuh
Duct loss			1645	Btuh
Subtotal			18462	Btuh
Ventilation	0	cfm	0	Btuh
TOTAL HEAT LOSS			18462	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1440 sqft)

Load component			Load	
Window total	130	sqft	2843	Btuh
Wall total	1079	sqft	2920	Btuh
Door total	40	sqft	560	Btuh
Ceiling total	1440	sqft	2201	Btuh
Floor total			0	Btuh
Infiltration	31	cfm	810	Btuh
Internal gain			3780	Btuh
Duct gain			1153	Btuh
Sens. Ventilation	0	cfm	0	Btuh
Blower Load			0	Btuh
Total sensible gain			14268	Btuh
Latent gain(ducts)			454	Btuh
Latent gain(infiltration)			1127	Btuh
Latent gain(ventilation)			0	Btuh
Latent gain(internal/occupants/other)			1200	Btuh
Total latent gain			2781	Btuh
TOTAL HEAT GAIN			17049	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2020-07-22

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Grace Richards
173 SW Wigwam Court
Fort White, FL

Project Title:
200791 Richards
Building Type: User

2020-07-22

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 38.0 F (MJ8 99%)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.20	Metal	0.30	E	15.0		11.4	171 Btuh
2	2, NFRC 0.20	Metal	0.30	E	10.5		11.4	120 Btuh
3	2, NFRC 0.20	Metal	0.30	E	12.0		11.4	137 Btuh
4	2, NFRC 0.20	Metal	0.30	S	15.0		11.4	171 Btuh
5	2, NFRC 0.20	Metal	0.30	W	20.0		11.4	228 Btuh
6	2, NFRC 0.20	Metal	0.30	W	24.0		11.4	274 Btuh
7	2, NFRC 0.20	Metal	0.30	W	3.0		11.4	34 Btuh
8	2, NFRC 0.20	Metal	0.30	W	15.0		11.4	171 Btuh
9	2, NFRC 0.20	Metal	0.30	N	15.0		11.4	171 Btuh
Window Total					129.5(sqft)			1476 Btuh
Walls	Type	Ormt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	327		3.37	1101 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	225		3.37	759 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	302		3.37	1019 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	225		3.37	759 Btuh
Wall Total					1079(sqft)			3638 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		20		15.2	304 Btuh
2	Insulated - Exterior, n		(0.400)		20		15.2	304 Btuh
Door Total					40(sqft)			608Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Unvent Attic/D/Shing		(0.044)	0.0/22.0	1440		1.7	2390 Btuh
Ceiling Total					1440(sqft)			2390Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	156.0 ft(perim.)		44.8	6995 Btuh
Floor Total					1440 sqft			6995 Btuh
Envelope Subtotal:								15106 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		Load
	Natural		0.21	11520	1.00	41.1		1711 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Con)						(DLM of 0.098)	1645 Btuh
All Zones	Sensible Subtotal All Zones							18462 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Grace Richards
173 SW Wigwam Court
Fort White, FL

Project Title:
200791 Richards
Building Type: User

2020-07-22

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	18462 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	18462 Btuh

EQUIPMENT

1. Electric Heat Pump	#	20000 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

Grace Richards
173 SW Wigwam Court
Fort White, FL

Project Title:
200791 Richards

2020-07-22

Reference City: Gainesville, FL

Temperature Difference: 24.0F(MJ8 99%)

Humidity difference: 54gr.

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	E	2.0ft	0.5ft	15.0	3.5	11.5	11	26	345	Btuh			
2	2 NFRC	0.20, 0.30	No	No	E	2.0ft	0.5ft	10.5	3.5	7.0	11	26	226	Btuh			
3	2 NFRC	0.20, 0.30	No	No	E	2.0ft	0.5ft	12.0	3.5	8.5	11	26	265	Btuh			
4	2 NFRC	0.20, 0.30	No	No	S	2.0ft	0.5ft	15.0	15.0	0.0	11	13	171	Btuh			
5	2 NFRC	0.20, 0.30	No	No	W	2.0ft	0.5ft	20.0	4.6	15.4	11	26	460	Btuh			
6	2 NFRC	0.20, 0.30	No	No	W	2.0ft	0.5ft	24.0	7.0	17.0	11	26	531	Btuh			
7	2 NFRC	0.20, 0.30	No	No	W	2.0ft	0.5ft	3.0	3.0	0.0	11	26	34	Btuh			
8	2 NFRC	0.20, 0.30	No	No	W	2.0ft	0.5ft	15.0	3.5	11.5	11	26	345	Btuh			
9	2 NFRC	0.20, 0.30	No	No	N	2.0ft	0.5ft	15.0	0.0	15.0	11	11	171	Btuh			
	Excursion												296	Btuh			
	Window Total							130 (sqft)					2843 Btuh				
Walls	Type					U-Value		R-Value		Area(sqft)		HTM		Load			
								Cav/Sheath									
	1	Frame - Wood - Ext					0.09		13.0/0.0		326.5		2.7		884 Btuh		
	2	Frame - Wood - Ext					0.09		13.0/0.0		225.0		2.7		609 Btuh		
	3	Frame - Wood - Ext					0.09		13.0/0.0		302.0		2.7		818 Btuh		
	4	Frame - Wood - Ext					0.09		13.0/0.0		225.0		2.7		609 Btuh		
	Wall Total									1079 (sqft)				2920 Btuh			
Doors	Type					Area (sqft)					HTM		Load				
	1	Insulated - Exterior					20.0					14.0		280 Btuh			
	2	Insulated - Exterior					20.0					14.0		280 Btuh			
		Door Total					40 (sqft)							560 Btuh			
Ceilings	Type/Color/Surface					U-Value		R-Value		Area(sqft)		HTM		Load			
	1	Unvented Attic/DarkShingle					0.044		0.0/22.0		1440.0		1.53		2201 Btuh		
		Ceiling Total									1440 (sqft)				2201 Btuh		
Floors	Type					R-Value					Size		HTM		Load		
	1	Slab On Grade					0.0					1440 (ft-perimeter)		0.0		0 Btuh	
		Floor Total										1440.0 (sqft)				0 Btuh	
	Envelope Subtotal:													8524 Btuh			
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load			
	Natural					0.16		11520		1		30.8		810 Btuh			
Internal gain						Occupants		Btuh/occupant		Appliance		Load					
						6		X 230		+		2400		3780 Btuh			
	Sensible Envelope Load:													13114 Btuh			
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Condi)										(DGM of 0.088)		1153 Btuh				
	Sensible Load All Zones													14268 Btuh			

Manual J Summer Calculations

Residential Load - Component Details (continued)

Grace Richards
173 SW Wigwam Court
Fort White, FL

Project Title:
200791 Richards

Climate: FL_GAINESVILLE_REGIONAL_A

2020-07-22

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	13114 Btuh
	Sensible Duct Load	1153 Btuh
	Total Sensible Zone Loads	14268 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	14268 Btuh
	Latent infiltration gain (for 54 gr. humidity difference)	1127 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	454 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2781 Btuh
	TOTAL GAIN	17049 Btuh

EQUIPMENT

1. Central Unit	#	20000 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

