

Residential System Sizing Calculation

Summary

Project Title:
Robert Coon

, FL

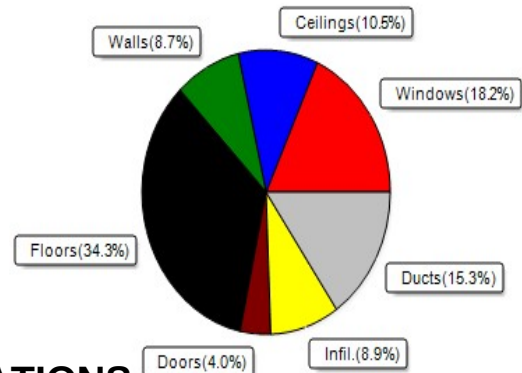
8/11/2021

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	35042	Btuh	Total cooling load calculation	26475	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	137.0	48000	Sensible (SHR = 0.85)	179.6	40800
Heat Pump + Auxiliary(0.0kW)	137.0	48000	Latent	191.3	7200
			Total (Electric Heat Pump)	181.3	48000

WINTER CALCULATIONS

Winter Heating Load (for 2891 sqft)

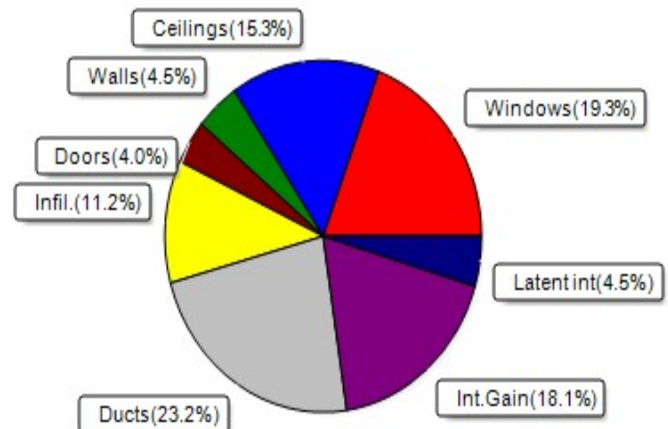
Load component		Load	
Window total	266 sqft	6376	Btuh
Wall total	1913 sqft	3043	Btuh
Door total	88 sqft	1408	Btuh
Ceiling total	2891 sqft	3683	Btuh
Floor total	2891 sqft	12036	Btuh
Infiltration	71 cfm	3120	Btuh
Duct loss		5376	Btuh
Subtotal		35042	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		35042	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2891 sqft)

Load component		Load	
Window total	266 sqft	5100	Btuh
Wall total	1913 sqft	1198	Btuh
Door total	88 sqft	1056	Btuh
Ceiling total	2891 sqft	4051	Btuh
Floor total		0	Btuh
Infiltration	53 cfm	1112	Btuh
Internal gain		4780	Btuh
Duct gain		5415	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		22712	Btuh
Latent gain(ducts)		719	Btuh
Latent gain(infiltration)		1845	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3763	Btuh
TOTAL HEAT GAIN		26475	Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Robert Coon

, FL

8/11/2021

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	0.27, 0.60	No	No	N		1.5ft.	2.3ft.	30.0	0.0	30.0	17	17	512	Btuh	
2	2 NFRC	0.27, 0.60	No	No	N		20.5f	2.3ft.	52.0	0.0	52.0	17	17	888	Btuh	
3	2 NFRC	0.27, 0.60	No	No	N		13.5f	2.3ft.	36.0	0.0	36.0	17	17	615	Btuh	
4	2 NFRC	0.27, 0.60	No	No	E		1.5ft.	2.3ft.	16.0	0.0	16.0	17	37	599	Btuh	
5	2 NFRC	0.27, 0.60	No	No	E		1.5ft.	2.3ft.	6.7	0.0	6.7	17	37	250	Btuh	
6	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	30.0	30.0	0.0	17	19	512	Btuh	
7	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	30.0	30.0	0.0	17	19	512	Btuh	
8	2 NFRC	0.27, 0.60	No	No	S		7.5ft.	2.3ft.	30.0	30.0	0.0	17	19	512	Btuh	
9	2 NFRC	0.27, 0.60	No	No	S		1.5ft.	2.3ft.	30.0	30.0	0.0	17	19	512	Btuh	
10	2 NFRC	0.27, 0.60	No	No	W		1.5ft.	2.3ft.	5.0	0.0	5.0	17	37	187	Btuh	
	Window Total									266 (sqft)					5100 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath									
1	Insulated Concrete Form - Ext						0.03	23.5/0.0	141.8			0.5		69 Btuh		
2	Insulated Concrete Form - Ext						0.03	23.5/0.0	64.5			0.5		31 Btuh		
3	Insulated Concrete Form - Ext						0.03	23.5/0.0	59.8			0.5		29 Btuh		
4	Insulated Concrete Form - Ext						0.03	23.5/0.0	64.5			0.5		31 Btuh		
5	Insulated Concrete Form - Ext						0.03	23.5/0.0	75.0			0.5		36 Btuh		
6	Insulated Concrete Form - Ext						0.03	23.5/0.0	293.8			0.5		143 Btuh		
7	Insulated Concrete Form - Ext						0.03	23.5/0.0	66.0			0.5		32 Btuh		
8	Insulated Concrete Form - Ext						0.03	23.5/0.0	18.0			0.5		9 Btuh		
9	Insulated Concrete Form - Ext						0.03	23.5/0.0	120.8			0.5		59 Btuh		
10	Insulated Concrete Form - Ext						0.03	23.5/0.0	36.0			0.5		18 Btuh		
11	Insulated Concrete Form - Ext						0.03	23.5/0.0	96.8			0.5		47 Btuh		
12	Insulated Concrete Form - Ext						0.03	23.5/0.0	36.0			0.5		18 Btuh		
13	Insulated Concrete Form - Ext						0.03	23.5/0.0	128.5			0.5		62 Btuh		
14	Insulated Concrete Form - Ext						0.03	23.5/0.0	18.0			0.5		9 Btuh		
15	Insulated Concrete Form - Ext						0.03	23.5/0.0	125.3			0.5		61 Btuh		
16	Insulated Concrete Form - Ext						0.03	23.5/0.0	345.3			0.5		168 Btuh		
17	Frame - Wood - Adj						0.09	13.0/0.0	223.0			1.7		376 Btuh		
	Wall Total									1913 (sqft)					1198 Btuh	
Doors	Type						Area (sqft)			HTM		Load				
1	Insulated - Exterior						48.0			12.0		576 Btuh				
2	Insulated - Exterior						20.0			12.0		240 Btuh				
3	Insulated - Garage						20.0			12.0		240 Btuh				
	Door Total									88 (sqft)					1056 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)			HTM		Load		
1	Vented Attic/Light/Shingle						0.032	30.0/0.0	2891.0			1.40		4051 Btuh		
	Ceiling Total									2891 (sqft)					4051 Btuh	
Floors	Type						R-Value		Size			HTM		Load		
1	Slab On Grade						0.0		2891 (ft-perimeter)			0.0		0 Btuh		
	Floor Total									2891.0 (sqft)					0 Btuh	
	Envelope Subtotal:													11405 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Robert Coon

, FL

8/11/2021

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 26019	Wall Ratio 1	CFM= 53.4	Load 1112 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
	Sensible Envelope Load:					17297 Btuh
Duct load	Extremelysealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.313)					5415 Btuh
	Sensible Load All Zones					22712 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Robert Coon

, FL

8/11/2021

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	17297 Btuh
	Sensible Duct Load	5415 Btuh
	Total Sensible Zone Loads	22712 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	22712 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1845 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	719 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3763 Btuh
	TOTAL GAIN	26475 Btuh

EQUIPMENT

1. Central Unit	#	48000 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

Project Title:
Robert Coon
Building Type: User

, FL

8/11/2021

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 0.27	Vinyl	0.60	N	30.0		24.0	720 Btuh
2	2, NFRC 0.27	Vinyl	0.60	N	52.0		24.0	1248 Btuh
3	2, NFRC 0.27	Vinyl	0.60	N	36.0		24.0	864 Btuh
4	2, NFRC 0.27	Vinyl	0.60	E	16.0		24.0	384 Btuh
5	2, NFRC 0.27	Vinyl	0.60	E	6.7		24.0	160 Btuh
6	2, NFRC 0.27	Vinyl	0.60	S	30.0		24.0	720 Btuh
7	2, NFRC 0.27	Vinyl	0.60	S	30.0		24.0	720 Btuh
8	2, NFRC 0.27	Vinyl	0.60	S	30.0		24.0	720 Btuh
9	2, NFRC 0.27	Vinyl	0.60	S	30.0		24.0	720 Btuh
10	2, NFRC 0.27	Vinyl	0.60	W	5.0		24.0	120 Btuh
Window Total					265.7(sqft)			6376 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	142		1.33	189 Btuh
2	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	65		1.33	86 Btuh
3	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	60		1.33	80 Btuh
4	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	65		1.33	86 Btuh
5	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	75		1.33	100 Btuh
6	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	294		1.33	391 Btuh
7	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	66		1.33	88 Btuh
8	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	18		1.33	24 Btuh
9	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	121		1.33	161 Btuh
10	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	36		1.33	48 Btuh
11	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	97		1.33	129 Btuh
12	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	36		1.33	48 Btuh
13	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	129		1.33	171 Btuh
14	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	18		1.33	24 Btuh
15	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	125		1.33	167 Btuh
16	Ins. Conc. Form - Ext		(0.033)	23.5/0.0	345		1.33	460 Btuh
17	Frame - Wood - Adj		(0.089)	13.0/0.0	223		3.55	792 Btuh
Wall Total					1913(sqft)			3043 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		48		16.0	768 Btuh
2	Insulated - Exterior, n		(0.400)		20		16.0	320 Btuh
3	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					88(sqft)			1408Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.032)	30.0/0.0	2891		1.3	3683 Btuh
Ceiling Total					2891(sqft)			3683Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	255.0 ft(perim.)		47.2	12036 Btuh
Floor Total					2891 sqft			12036 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Project Title:
Robert Coon
Building Type: User

, FL

8/11/2021

	Envelope Subtotal:	26546 Btuh
Infiltration	Type Wholehouse ACH Volume(cuft) Wall Ratio CFM= Natural 0.16 26019 1.00 71.3	3120 Btuh
Duct load	Extremely sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.181)	5376 Btuh
All Zones	Sensible Subtotal All Zones	35042 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sensible Heat Loss Total Heat Loss	35042 Btuh 0 Btuh 35042 Btuh
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EQUIPMENT

1. Electric Heat Pump	#	48000 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