

Residential System Sizing Calculation

Summary

Project Title:
Castagna & West

, FL

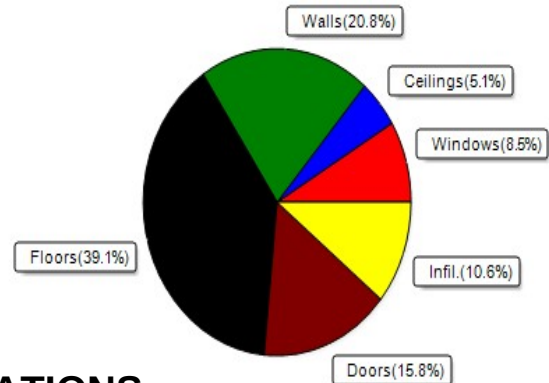
4/16/2024

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	29195 Btuh	Total cooling load calculation	19408 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	164.4 48000	Sensible (SHR = 0.75)	219.8 36000
Heat Pump + Auxiliary(0.0kW)	164.4 48000	Latent	396.3 12000
		Total (Electric Heat Pump)	247.3 48000

WINTER CALCULATIONS

Winter Heating Load (for 2617 sqft)

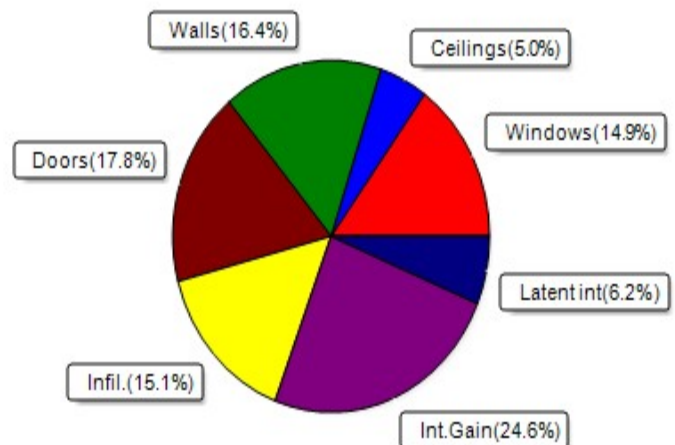
Load component	Load
Window total 240 sqft	2496 Btuh
Wall total 1919 sqft	6087 Btuh
Door total 251 sqft	4612 Btuh
Ceiling total 2617 sqft	1485 Btuh
Floor total 2617 sqft	11422 Btuh
Infiltration 71 cfm	3093 Btuh
Duct loss	0 Btuh
Subtotal	29195 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	29195 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 2617 sqft)

Load component	Load
Window total 240 sqft	2889 Btuh
Wall total 1919 sqft	3185 Btuh
Door total 251 sqft	3459 Btuh
Ceiling total 2617 sqft	965 Btuh
Floor total	0 Btuh
Infiltration 53 cfm	1102 Btuh
Internal gain	4780 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	16380 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1828 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	3028 Btuh
TOTAL HEAT GAIN	19408 Btuh



8th Edition



EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

4-16-24

EnergyGauge® / USRCZB v8.0.00

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Castagna & West

, FL

4/16/2024

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	1.3ft	20.0	0.0	20.0	9	9	183	Btuh		
2	2 NFRC	0.20, 0.26	No	No	N	1.5ft	1.3ft	54.0	0.0	54.0	9	9	494	Btuh		
3	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	36.0	0.0	36.0	9	24	872	Btuh		
4	2 NFRC	0.20, 0.26	No	No	E	1.5ft	1.3ft	10.0	0.0	10.0	9	24	242	Btuh		
5	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	30.0	30.0	0.0	9	11	274	Btuh		
6	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	60.0	60.0	0.0	9	11	549	Btuh		
7	2 NFRC	0.20, 0.26	No	No	S	1.5ft	1.3ft	30.0	30.0	0.0	9	11	274	Btuh		
	Window Total								240 (sqft)					2889	Btuh	
Walls	Type	U-Value					R-Value		Area(sqft)		HTM		Load			
							Cav/Sheath									
1	Frame - Wood - Ext	0.08					19.0/0.0		120.0		1.7		198		Btuh	
2	Frame - Wood - Ext	0.08					19.0/0.0		94.3		1.7		156		Btuh	
3	Frame - Wood - Ext	0.08					19.0/0.0		286.0		1.7		473		Btuh	
4	Frame - Wood - Ext	0.08					19.0/0.0		349.0		1.7		577		Btuh	
5	Frame - Wood - Ext	0.08					19.0/0.0		121.7		1.7		201		Btuh	
6	Frame - Wood - Ext	0.08					19.0/0.0		40.0		1.7		66		Btuh	
7	Frame - Wood - Ext	0.08					19.0/0.0		250.7		1.7		415		Btuh	
8	Frame - Wood - Ext	0.08					19.0/0.0		40.0		1.7		66		Btuh	
9	Frame - Wood - Ext	0.08					19.0/0.0		128.3		1.7		212		Btuh	
10	Frame - Wood - Ext	0.08					19.0/0.0		100.0		1.7		165		Btuh	
11	Frame - Wood - Adj	0.09					13.0/0.0		336.0		1.7		567		Btuh	
12	Frame - Wood - Ext	0.08					19.0/0.0		53.3		1.7		88		Btuh	
	Wall Total								1919 (sqft)					3185	Btuh	
Doors	Type								Area (sqft)		HTM		Load			
1	Insulated - Exterior								24.0		13.8		331		Btuh	
2	Insulated - Exterior								160.0		13.8		2208		Btuh	
3	Insulated - Exterior								42.7		13.8		589		Btuh	
4	Insulated - Garage								24.0		13.8		331		Btuh	
	Door Total								251 (sqft)					3459	Btuh	
Ceilings	Type/Color/Surface	U-Value					R-Value		Area(sqft)		HTM		Load			
1	SnglAsmb no airsp/DarkShingle	0.014					30.0/44.0		2617.0		0.37		965		Btuh	
	Ceiling Total								2617 (sqft)					965	Btuh	
Floors	Type						R-Value		Size		HTM		Load			
1	Slab On Grade						0.0		2617 (ft-perimeter)		0.0		0		Btuh	
	Floor Total								2617.0 (sqft)					0	Btuh	
	Envelope Subtotal:													10498		Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Castagna & West
Climate: FL_GAINESVILLE_REGIONAL_A

, FL

4/16/2024

Infiltration	Type Natural	Average ACH 0.12	Volume(cuft) 26170	Wall Ratio 1	CFM= 52.9	Load 1102 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
	Sensible Envelope Load:					16380 Btuh
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi) (DGM of 0.000)					0 Btuh
	Sensible Load All Zones					16380 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Castagna & West

, FL

4/16/2024

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	16380 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	16380 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	16380 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1828 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3028 Btuh
	TOTAL GAIN	19408 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

, FL

Project Title:
Castagna & West
Building Type: User

4/16/2024

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	20.0		10.4	208 Btuh
2	2, NFRC 0.20	Vinyl	0.26	N	54.0		10.4	562 Btuh
3	2, NFRC 0.20	Vinyl	0.26	E	36.0		10.4	374 Btuh
4	2, NFRC 0.20	Vinyl	0.26	E	10.0		10.4	104 Btuh
5	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
6	2, NFRC 0.20	Vinyl	0.26	S	60.0		10.4	624 Btuh
7	2, NFRC 0.20	Vinyl	0.26	S	30.0		10.4	312 Btuh
	Window Total				240.0(sqft)			2496 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.077)	19.0/0.0	120		3.09	371 Btuh
2	Frame - Wood	- Ext	(0.077)	19.0/0.0	94		3.09	292 Btuh
3	Frame - Wood	- Ext	(0.077)	19.0/0.0	286		3.09	884 Btuh
4	Frame - Wood	- Ext	(0.077)	19.0/0.0	349		3.09	1079 Btuh
5	Frame - Wood	- Ext	(0.077)	19.0/0.0	122		3.09	376 Btuh
6	Frame - Wood	- Ext	(0.077)	19.0/0.0	40		3.09	124 Btuh
7	Frame - Wood	- Ext	(0.077)	19.0/0.0	251		3.09	775 Btuh
8	Frame - Wood	- Ext	(0.077)	19.0/0.0	40		3.09	124 Btuh
9	Frame - Wood	- Ext	(0.077)	19.0/0.0	128		3.09	397 Btuh
10	Frame - Wood	- Ext	(0.077)	19.0/0.0	100		3.09	309 Btuh
11	Frame - Wood	- Adj	(0.089)	13.0/0.0	336		3.55	1193 Btuh
12	Frame - Wood	- Ext	(0.077)	19.0/0.0	53		3.09	165 Btuh
	Wall Total				1919(sqft)			6087 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
2	Insulated - Exterior,	n	(0.460)		160		18.4	2944 Btuh
3	Insulated - Exterior,	n	(0.460)		43		18.4	785 Btuh
4	Insulated - Garage,	n	(0.460)		24		18.4	442 Btuh
	Door Total				251(sqft)			4612Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Shing		(0.014)	30.0/44.0	2617		0.57	1485 Btuh
	Ceiling Total				2617(sqft)			1485Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	242.0 ft(perim.)		47.2	11422 Btuh
	Floor Total				2617 sqft			11422 Btuh
	Envelope Subtotal:							26102 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.16	26170	1.00	70.5		3093 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Castagna & West
Building Type: User

4/16/2024

Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)	0 Btuh
All Zones	Sensible Subtotal All Zones	29195 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm) Total Heat Loss	29195 Btuh 0 Btuh 29195 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