

Residential System Sizing Calculation

Summary

Project Title:
RODRIGUEZ CONTAINER HOUSE

Lake City, FL

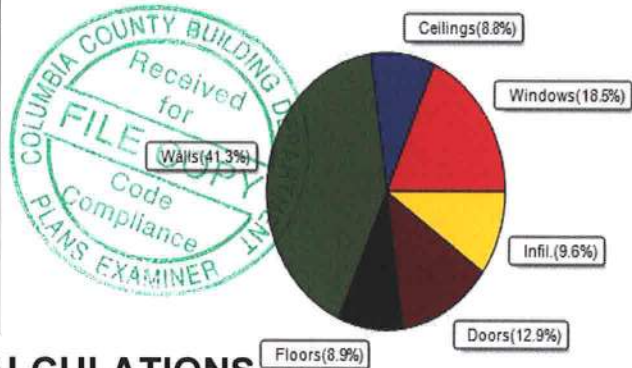
8/16/2020

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	7416	Btuh	Total cooling load calculation	9072	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	102.2	7582	Sensible (SHR = 0.75)	92.6	6903
Heat Pump + Auxiliary(0.0kW)	102.2	7582	Latent	141.9	2301
			Total (Electric Heat Pump)	101.4	9204

WINTER CALCULATIONS

Winter Heating Load (for 640 sqft)

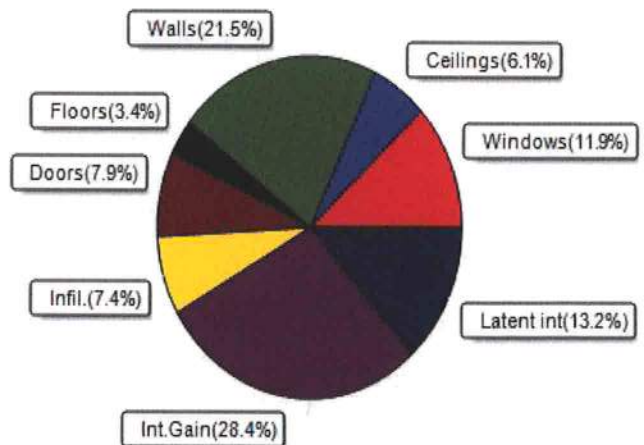
Load component		Load
Window total	86 sqft	1374 Btuh
Wall total	862 sqft	3061 Btuh
Door total	60 sqft	960 Btuh
Ceiling total	640 sqft	650 Btuh
Floor total	640 sqft	659 Btuh
Infiltration	16 cfm	713 Btuh
Duct loss		0 Btuh
Subtotal		7416 Btuh
Ventilation	0 cfm	0 Btuh
TOTAL HEAT LOSS		7416 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 640 sqft)

Load component		Load
Window total	86 sqft	1083 Btuh
Wall total	862 sqft	1951 Btuh
Door total	60 sqft	720 Btuh
Ceiling total	640 sqft	552 Btuh
Floor total		310 Btuh
Infiltration	12 cfm	254 Btuh
Internal gain		2580 Btuh
Duct gain		0 Btuh
Sens. Ventilation	0 cfm	0 Btuh
Blower Load		0 Btuh
Total sensible gain		7451 Btuh
Latent gain(ducts)		0 Btuh
Latent gain(infiltration)		421 Btuh
Latent gain(ventilation)		0 Btuh
Latent gain(internal/occupants/other)		1200 Btuh
Total latent gain		1621 Btuh
TOTAL HEAT GAIN		9072 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
RODRIGUEZ CONTAINER HOUSE

Lake City, FL

8/16/2020

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	0.25, 0.40	B-L	No	N	2.0ft	2.0ft	20.0	0.0	20.0	10	10	201	Btuh	
2	2 NFRC	0.25, 0.40	B-L	No	N	2.0ft	2.0ft	35.9	0.0	35.9	10	10	361	Btuh	
3	2 NFRC	0.25, 0.40	No	No	S	2.0ft	5.0ft	18.0	18.0	0.0	13	15	231	Btuh	
4	2 NFRC	0.25, 0.40	B-L	No	W	2.0ft	5.0ft	12.0	0.0	12.0	10	23	280	Btuh	
	Excursion												9	Btuh	
	Window Total							86 (sqft)					1083 Btuh		
Walls	Type					U-Value		R-Value		Area(sqft)		HTM		Load	
								Cav/Sheath							
1	Frame - Wood - Ext					0.09		13.0/0.0		88.1		2.3		199 Btuh	
2	Frame - Wood - Ext					0.09		13.0/0.0		126.0		2.3		285 Btuh	
3	Frame - Wood - Ext					0.09		13.0/0.0		340.0		2.3		770 Btuh	
4	Frame - Wood - Ext					0.09		13.0/0.0		308.0		2.3		697 Btuh	
	Wall Total									862 (sqft)				1951 Btuh	
Doors	Type									Area (sqft)		HTM		Load	
1	Insulated - Exterior									20.0		12.0		240 Btuh	
2	Insulated - Exterior									40.0		12.0		480 Btuh	
	Door Total									60 (sqft)				720 Btuh	
Ceilings	Type/Color/Surface					U-Value		R-Value		Area(sqft)		HTM		Load	
1	Vented Attic/Light/Metal/RB					0.025		38.0/0.0		640.0		0.86		552 Btuh	
	Ceiling Total									640 (sqft)				552 Btuh	
Floors	Type							R-Value		Size		HTM		Load	
1	Stem/Crawlsp(Carpet)(v)							19.0		640 (sqft)		0.5		310 Btuh	
	Floor Total									640.0 (sqft)				310 Btuh	
	Envelope Subtotal:													4617 Btuh	
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural(Adjusted for ventilation)					0.13		5760		1		12.2		254 Btuh	
Internal gain						Occupants		Btuh/occupant				Appliance		Load	
						6		X 230		+		1200		2580 Btuh	
	Sensible Envelope Load:													7451 Btuh	
Duct load	NA, Supply(R0.0-None), Return(R0.0-None)										(DGM of 0.000)			0 Btuh	
	Sensible Load All Zones													7451 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate: FL_GAINESVILLE_REGIONAL_A
RODRIGUEZ CONTAINER HOUSE

Lake City, FL

8/16/2020

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	7451 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	7451 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	7451 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	421 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	1621 Btuh
	TOTAL GAIN	9072 Btuh

EQUIPMENT

1. Central Unit	#	9204 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:

RODRIGUEZ CONTAINER HOUSE

Building Type: User

Lake City, FL

8/16/2020

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 0.25	Metal	0.40	N	20.0		16.0	320 Btuh
2	2, NFRC 0.25	Metal	0.40	N	35.9		16.0	574 Btuh
3	2, NFRC 0.25	Metal	0.40	S	18.0		16.0	288 Btuh
4	2, NFRC 0.25	Metal	0.40	W	12.0		16.0	192 Btuh
	Window Total				85.9(sqft)			1374 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	88		3.55	313 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	126		3.55	447 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	340		3.55	1207 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	308		3.55	1094 Btuh
	Wall Total				862(sqft)			3061 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)		40		16.0	640 Btuh
	Door Total				60(sqft)			960Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Metal		(0.025)	38.0/0.0	640		1.0	650 Btuh
	Ceiling Total				640(sqft)			650Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Stem/Crawlsp(Carpet)(v)		(0.049)	19.0/13.0	640.0	sqft	1.0	659 Btuh
	Floor Total				640 sqft			659 Btuh
	Envelope Subtotal:							6703 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio		CFM=	
	Natural		0.17	5760	1.00		16.3	713 Btuh
Duct load	NA, R0.0, Supply(), Return()					(DLM of 0.000)		0 Btuh
All Zones	Sensible Subtotal All Zones							7416 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Lake City, FL

Project Title:
RODRIGUEZ CONTAINER HOUSE
Building Type: User

8/16/2020

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	7416 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	7416 Btuh

EQUIPMENT

1. Electric Heat Pump	#	7582 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