

Residential System Sizing Calculation

Summary

Emery Accessory Dwelling

Project Title:

210735 Emery - Zecher Construction

Lake City, FL

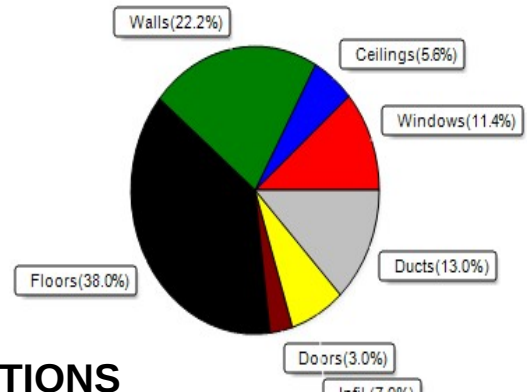
2021-08-03

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	14427 Btuh	Total cooling load calculation	14453 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	104.0 15000	Sensible (SHR = 0.75)	89.4 11250
Heat Pump + Auxiliary(0.0kW)	104.0 15000	Latent	201.3 3750
		Total (Electric Heat Pump)	103.8 15000

WINTER CALCULATIONS

Winter Heating Load (for 792 sqft)

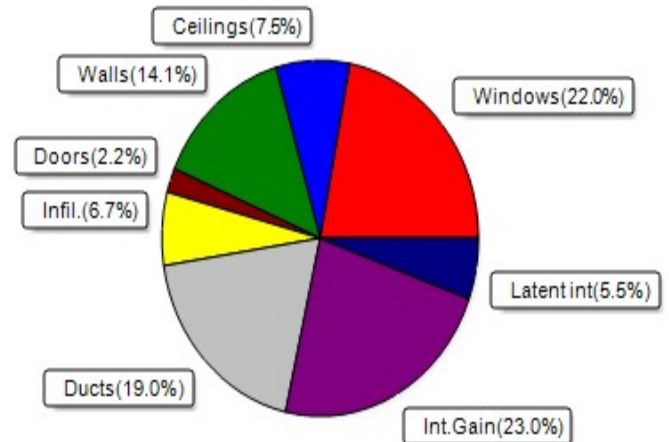
Load component		Load	
Window total	117 sqft	1640	Btuh
Wall total	900 sqft	3196	Btuh
Door total	27 sqft	427	Btuh
Ceiling total	792 sqft	804	Btuh
Floor total	792 sqft	5475	Btuh
Infiltration	23 cfm	1015	Btuh
Duct loss		1870	Btuh
Subtotal		14427	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		14427	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 792 sqft)

Load component		Load	
Window total	117 sqft	3180	Btuh
Wall total	900 sqft	2037	Btuh
Door total	27 sqft	320	Btuh
Ceiling total	792 sqft	1085	Btuh
Floor total		0	Btuh
Infiltration	17 cfm	362	Btuh
Internal gain		3320	Btuh
Duct gain		2286	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		12590	Btuh
Latent gain(ducts)		463	Btuh
Latent gain(infiltration)		600	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		800	Btuh
Total latent gain		1862	Btuh
TOTAL HEAT GAIN		14453	Btuh



8th Edition

EnergyGauge® System Sizing
PREPARED BY: Evan Beamsley
DATE: 2021-08-03

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Emery Accessory Dwelling

Project Title:

210735 Emery - Zecher Construction

Lake City, FL

Building Type: User

2021-08-03

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	0.35	N	26.7		14.0	373 Btuh
2	2, NFRC 0.25	Metal	0.35	E	9.0		14.0	126 Btuh
3	2, NFRC 0.25	Metal	0.35	S	20.0		14.0	280 Btuh
4	2, NFRC 0.25	Metal	0.35	W	37.5		14.0	525 Btuh
5	2, NFRC 0.25	Metal	0.35	W	4.0		14.0	56 Btuh
6	2, NFRC 0.25	Metal	0.35	W	20.0		14.0	280 Btuh
	Window Total				117.2(sqft)			1640 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	158		3.55	561 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	315		3.55	1118 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	165		3.55	585 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	263		3.55	932 Btuh
	Wall Total				900(sqft)			3196 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		13		16.0	213 Btuh
2	Insulated - Exterior, n		(0.400)		13		16.0	213 Btuh
	Door Total				27(sqft)			427Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/D/Shing		(0.025)	38.0/0.0	792		1.0	804 Btuh
	Ceiling Total				792(sqft)			804Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	116.0 ft(perim.)		47.2	5475 Btuh
	Floor Total				792 sqft			5475 Btuh
	Envelope Subtotal:							11542 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.22	6336	1.00	23.2		1015 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.149)							1870 Btuh
All Zones	Sensible Subtotal All Zones							14427 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Emery Accessory Dwelling

Project Title:

210735 Emery - Zecher Construction

Lake City, FL

Building Type: User

2021-08-03

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	14427 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	14427 Btuh

EQUIPMENT

1. Electric Heat Pump	#	15000 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

Emery Accessory Dwelling

Project Title:

210735 Emery - Zecher Construction

Lake City, FL

2021-08-03

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, 0.35	No	No	N		1.5ft	7.0ft	26.7	0.0	26.7	12	12	318	Btuh
2	2 NFRC	0.25, 0.35	No	No	E		1.5ft	1.3ft	9.0	0.0	9.0	12	31	277	Btuh
3	2 NFRC	0.25, 0.35	No	No	S		1.5ft	7.0ft	20.0	4.6	15.4	12	14	268	Btuh
4	2 NFRC	0.25, 0.35	No	No	W		1.5ft	1.3ft	37.5	0.0	37.5	12	31	1153	Btuh
5	2 NFRC	0.25, 0.35	No	No	W		1.5ft	1.3ft	4.0	0.0	4.0	12	31	123	Btuh
6	2 NFRC	0.25, 0.35	No	No	W		1.5ft	1.3ft	20.0	0.0	20.0	12	31	615	Btuh
	Excursion													426	Btuh
	Window Total								117 (sqft)					3180 Btuh	
Walls	Type	U-Value			R-Value		Area(sqft)			HTM		Load			
					Cav/Sheath										
1	Frame - Wood - Ext	0.09			13.0/0.0		158.0			2.3		358 Btuh			
2	Frame - Wood - Ext	0.09			13.0/0.0		315.0			2.3		713 Btuh			
3	Frame - Wood - Ext	0.09			13.0/0.0		164.7			2.3		373 Btuh			
4	Frame - Wood - Ext	0.09			13.0/0.0		262.5			2.3		594 Btuh			
	Wall Total						900 (sqft)					2037 Btuh			
Doors	Type	U-Value			R-Value		Area (sqft)			HTM		Load			
1	Insulated - Exterior						13.3			12.0		160 Btuh			
2	Insulated - Exterior						13.3			12.0		160 Btuh			
	Door Total						27 (sqft)					320 Btuh			
Ceilings	Type/Color/Surface	U-Value			R-Value		Area(sqft)			HTM		Load			
1	Vented Attic/DarkShingle	0.025			38.0/0.0		792.0			1.37		1085 Btuh			
	Ceiling Total						792 (sqft)					1085 Btuh			
Floors	Type	U-Value			R-Value		Size			HTM		Load			
1	Slab On Grade				0.0		792 (ft-perimeter)			0.0		0 Btuh			
	Floor Total						792.0 (sqft)					0 Btuh			
	Envelope Subtotal:													6622 Btuh	
Infiltration	Type	Average ACH			Volume(cuft)		Wall Ratio		CFM=		Load				
	Natural	0.16			6336		1		17.4		362 Btuh				
Internal gain		Occupants			Btuh/occupant		Appliance		Load						
		4			X 230		+ 2400		3320 Btuh						
	Sensible Envelope Load:													10304 Btuh	
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic) (DGM of 0.222)													2286 Btuh	
	Sensible Load All Zones													12590 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Emery Accessory Dwelling

Project Title:

Climate:FL_GAINESVILLE_REGIONAL_A

210735 Emery - Zecher Construction

Lake City, FL

2021-08-03

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	10304 Btuh
	Sensible Duct Load	2286 Btuh
	Total Sensible Zone Loads	12590 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	12590 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	600 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	463 Btuh
	Latent occupant gain (4.0 people @ 200 Btuh per person)	800 Btuh
	Latent other gain	0 Btuh
	Latent total gain	1862 Btuh
	TOTAL GAIN	14453 Btuh

EQUIPMENT

1. Central Unit	#	15000 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