

Residential System Sizing Calculation

Summary

Heather Model - Lot 12 Stonehenge

Project Title:

220501 Heather - Lot 12 Stonehenge

Lake City, FL

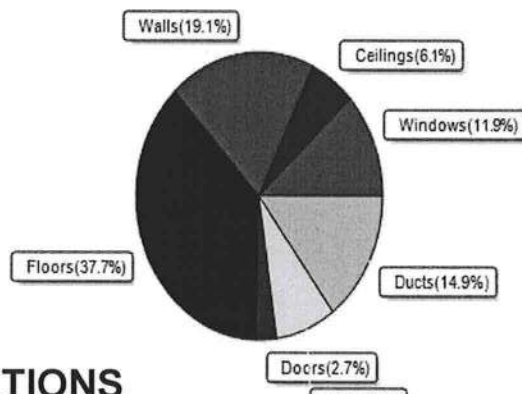
2022-04-25

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	30016	Btuh	Total cooling load calculation	23553	Btuh
Submitted heating capacity	% of calc	Btuh	Submitted cooling capacity	% of calc	Btuh
Total (Electric Heat Pump)	109.9	33000	Sensible (SHR = 0.75)	124.5	24750
Heat Pump + Auxiliary(0.0kW)	109.9	33000	Latent	224.2	8250
			Total (Electric Heat Pump)	140.1	33000

WINTER CALCULATIONS

Winter Heating Load (for 1798 sqft)

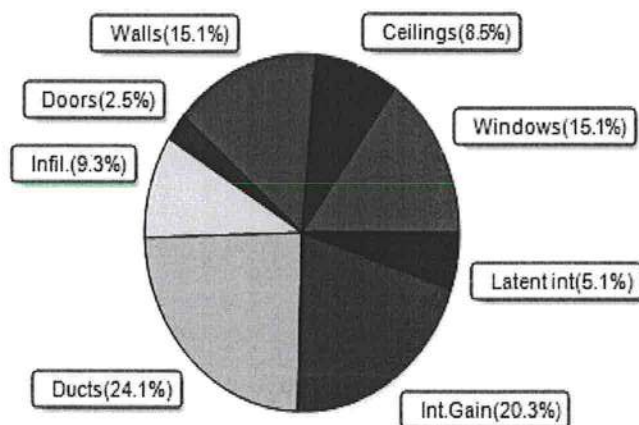
Load component		Load	
Window total	255 sqft	3565	Btuh
Wall total	1614 sqft	5730	Btuh
Door total	50 sqft	800	Btuh
Ceiling total	1798 sqft	1825	Btuh
Floor total	1798 sqft	11328	Btuh
Infiltration	53 cfm	2304	Btuh
Duct loss		4463	Btuh
Subtotal		30016	Btuh
Ventilation	0 cfm	0	Btuh
TOTAL HEAT LOSS		30016	Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1798 sqft)

Load component		Load	
Window total	255 sqft	3546	Btuh
Wall total	1614 sqft	3551	Btuh
Door total	50 sqft	600	Btuh
Ceiling total	1798 sqft	2008	Btuh
Floor total		0	Btuh
Infiltration	39 cfm	821	Btuh
Internal gain		4780	Btuh
Duct gain		4567	Btuh
Sens. Ventilation	0 cfm	0	Btuh
Blower Load		0	Btuh
Total sensible gain		19873	Btuh
Latent gain(ducts)		1118	Btuh
Latent gain(infiltration)		1362	Btuh
Latent gain(ventilation)		0	Btuh
Latent gain(internal/occupants/other)		1200	Btuh
Total latent gain		3680	Btuh
TOTAL HEAT GAIN		23553	Btuh



8th Edition

EnergyGauge® System Sizing
 PREPARED BY: Evan Beamsley
 DATE: 2022-04-25

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Heather Model - Lot 12 Stonehenge

Project Title:

220501 Heather - Lot 12 Stonehenge

Lake City, FL

Building Type: User

2022-04-25

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	45.0		14.0	630 Btuh
2	2, NFRC 0.25	Metal	0.35	E	13.3		14.0	187 Btuh
3	2, NFRC 0.25	Metal	0.35	N	45.0		14.0	630 Btuh
4	2, NFRC 0.25	Metal	0.35	N	40.0		14.0	560 Btuh
5	2, NFRC 0.25	Metal	0.35	N	26.7		14.0	373 Btuh
6	2, NFRC 0.25	Metal	0.35	N	15.0		14.0	210 Btuh
7	2, NFRC 0.25	Metal	0.35	E	6.0		14.0	84 Btuh
8	2, NFRC 0.25	Metal	0.35	S	15.0		14.0	210 Btuh
9	2, NFRC 0.25	Metal	0.35	S	10.0		14.0	140 Btuh
10	2, NFRC 0.25	Metal	0.35	S	15.0		14.0	210 Btuh
11	2, NFRC 0.25	Metal	0.35	W	1.7		14.0	23 Btuh
12	2, NFRC 0.25	Metal	0.35	W	16.0		14.0	224 Btuh
13	2, NFRC 0.25	Metal	0.35	W	6.0		14.0	84 Btuh
Window Total					254.7(sqft)			3565 Btuh
Walls	Type	Omt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	80		3.55	283 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	159		3.55	563 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	54		3.55	191 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	40		3.55	142 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	53		3.55	189 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	88		3.55	312 Btuh
7	Frame - Wood	- Ext	(0.089)	13.0/0.0	78		3.55	276 Btuh
8	Frame - Wood	- Ext	(0.089)	13.0/0.0	285		3.55	1013 Btuh
9	Frame - Wood	- Ext	(0.089)	13.0/0.0	77		3.55	273 Btuh
10	Frame - Wood	- Ext	(0.089)	13.0/0.0	48		3.55	170 Btuh
11	Frame - Wood	- Ext	(0.089)	13.0/0.0	60		3.55	213 Btuh
12	Frame - Wood	- Ext	(0.089)	13.0/0.0	66		3.55	236 Btuh
13	Frame - Wood	- Adj	(0.089)	13.0/0.0	177		3.55	627 Btuh
14	Frame - Wood	- Ext	(0.089)	13.0/0.0	350		3.55	1241 Btuh
Wall Total					1614(sqft)			5730 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior, n		(0.400)		7		16.0	107 Btuh
2	Insulated - Exterior, n		(0.400)		13		16.0	213 Btuh
3	Insulated - Exterior, n		(0.400)		10		16.0	160 Btuh
4	Insulated - Garage, n		(0.400)		20		16.0	320 Btuh
Door Total					50(sqft)			800Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Vented Attic/L/Shing		(0.025)	38.0/0.0	1798		1.0	1825 Btuh
Ceiling Total					1798(sqft)			1825Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	240.0 ft(perim.)		47.2	11328 Btuh
Floor Total					1798 sqft			11328 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

Heather Model - Lot 12 Stonehenge

Project Title:

220501 Heather - Lot 12 Stonehenge

Lake City, FL

Building Type: User

2022-04-25

	Envelope Subtotal:					23249 Btuh
Infiltration	Type	Wholehouse ACH	Volume(cuft)	Wall Ratio	CFM=	
	Natural	0.22	14384	1.00	52.6	2304 Btuh
Duct load	Average sealed, R6.0, Supply(Att), Return(Att) (DLM of 0.175)					4463 Btuh
All Zones	Sensible Subtotal All Zones					30016 Btuh

WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	30016 Btuh
	Ventilation Sensible Heat Loss	0 Btuh
	Total Heat Loss	30016 Btuh

EQUIPMENT

1. Electric Heat Pump	#	33000 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

Heather Model - Lot 12 Stonehenge

Project Title:

220501 Heather - Lot 12 Stonehenge

Lake City, FL

2022-04-25

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	1.0ft	45.0	0.0	45.0	12	12	536	Btuh
2	2 NFRC	0.25, 0.35	No	No	E	99.0f	1.0ft	13.3	13.3	0.0	12	31	159	Btuh
3	2 NFRC	0.25, 0.35	No	No	N	7.5ft	1.0ft	45.0	0.0	45.0	12	12	536	Btuh
4	2 NFRC	0.25, 0.35	No	No	N	12.5f	1.0ft	40.0	0.0	40.0	12	12	476	Btuh
5	2 NFRC	0.25, 0.35	No	No	N	12.5f	1.0ft	26.7	0.0	26.7	12	12	318	Btuh
6	2 NFRC	0.25, 0.35	No	No	N	1.5ft	1.0ft	15.0	0.0	15.0	12	12	179	Btuh
7	2 NFRC	0.25, 0.35	No	No	E	1.5ft	1.0ft	6.0	0.5	5.5	12	31	175	Btuh
8	2 NFRC	0.25, 0.35	No	No	S	1.5ft	1.0ft	15.0	15.0	0.0	12	14	179	Btuh
9	2 NFRC	0.25, 0.35	No	No	S	10.0f	1.0ft	10.0	10.0	0.0	12	14	119	Btuh
10	2 NFRC	0.25, 0.35	No	No	S	7.5ft	1.0ft	15.0	15.0	0.0	12	14	179	Btuh
11	2 NFRC	0.25, 0.35	No	No	W	1.5ft	1.0ft	1.7	0.5	1.2	12	31	42	Btuh
12	2 NFRC	0.25, 0.35	No	No	W	1.5ft	1.0ft	16.0	1.0	15.0	12	31	474	Btuh
13	2 NFRC	0.25, 0.35	No	No	W	1.5ft	1.0ft	6.0	0.5	5.5	12	31	175	Btuh
	Window Total							255 (sqft)					3546 Btuh	
Walls	Type						U-Value	R-Value	Area(sqft)		HTM		Load	
								Cav/Sheath						
1	Frame - Wood - Ext						0.09	13.0/0.0	79.7		2.3		180 Btuh	
2	Frame - Wood - Ext						0.09	13.0/0.0	158.7		2.3		359 Btuh	
3	Frame - Wood - Ext						0.09	13.0/0.0	53.7		2.3		121 Btuh	
4	Frame - Wood - Ext						0.09	13.0/0.0	40.0		2.3		91 Btuh	
5	Frame - Wood - Ext						0.09	13.0/0.0	53.3		2.3		121 Btuh	
6	Frame - Wood - Ext						0.09	13.0/0.0	88.0		2.3		199 Btuh	
7	Frame - Wood - Ext						0.09	13.0/0.0	77.7		2.3		176 Btuh	
8	Frame - Wood - Ext						0.09	13.0/0.0	285.3		2.3		646 Btuh	
9	Frame - Wood - Ext						0.09	13.0/0.0	77.0		2.3		174 Btuh	
10	Frame - Wood - Ext						0.09	13.0/0.0	48.0		2.3		109 Btuh	
11	Frame - Wood - Ext						0.09	13.0/0.0	60.0		2.3		136 Btuh	
12	Frame - Wood - Ext						0.09	13.0/0.0	66.3		2.3		150 Btuh	
13	Frame - Wood - Adj						0.09	13.0/0.0	176.7		1.7		298 Btuh	
14	Frame - Wood - Ext						0.09	13.0/0.0	349.7		2.3		791 Btuh	
	Wall Total							1614 (sqft)					3551 Btuh	
Doors	Type						Area (sqft)			HTM		Load		
1	Insulated - Exterior						6.7			12.0		80 Btuh		
2	Insulated - Exterior						13.3			12.0		160 Btuh		
3	Insulated - Exterior						10.0			12.0		120 Btuh		
4	Insulated - Garage						20.0			12.0		240 Btuh		
	Door Total							50 (sqft)					600 Btuh	
Ceilings	Type/Color/Surface						U-Value	R-Value	Area(sqft)		HTM		Load	
1	Vented Attic/Light/Shingle						0.025	38.0/0.0	1798.0		1.12		2008 Btuh	
	Ceiling Total							1798 (sqft)					2008 Btuh	
Floors	Type						R-Value		Size		HTM		Load	
1	Slab On Grade						0.0		1798 (ft-perimeter)		0.0		0 Btuh	
	Floor Total							1798.0 (sqft)					0 Btuh	
	Envelope Subtotal:												9705 Btuh	

Manual J Summer Calculations

Residential Load - Component Details (continued)

Heather Model - Lot 12 Stonehenge

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

220501 Heather - Lot 12 Stonehenge

Lake City, FL

2022-04-25

Infiltration	Type Natural	Average ACH 0.16	Volume(cuft) 14384	Wall Ratio 1	CFM= 39.5	Load 821 Btuh
Internal gain		Occupants 6	Btuh/occupant X 230	Appliance +	3400	Load 4780 Btuh
					Sensible Envelope Load:	15305 Btuh
Duct load	Average sealed, Supply(R6.0-Attic), Return(R6.0-Attic)				(DGM of 0.298)	4567 Btuh
					Sensible Load All Zones	19873 Btuh

Manual J Summer Calculations

Residential Load - Component Details (continued)

Heather Model - Lot 12 Stonehenge

Project Title:

Climate: FL_GAINESVILLE_REGIONAL_A

220501 Heather - Lot 12 Stonehenge

Lake City, FL

2022-04-25

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15305 Btuh
	Sensible Duct Load	4567 Btuh
	Total Sensible Zone Loads	19873 Btuh
	Sensible ventilation	0 Btuh
	Blower	0 Btuh
	Total sensible gain	19873 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1362 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	1118 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	3680 Btuh
	TOTAL GAIN	23553 Btuh

EQUIPMENT

1. Central Unit	#	33000 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